

## Record of Public Bid Opening

### MINERAL MOUNTAIN REST AREA REHABILITATION REQUISITION NO. B – 499900S

Bid Close Date: 10/02/08 – 5:00 PM

Bid Open Date: 10/03/08 – 10:30 AM

**STATUS: AWARDED - KENASTON COMPANY**

ITEM NO.	DESCRIPTION	UNIT	Bidder	Bidder
			Kenaston Company PO Box 245 Lewiston, ID 83501	Richard Jordan 7187 Happy Valley Rd Kuna, ID 83634
			TOTAL AMOUNT BID	TOTAL AMOUNT BID
1	MINERAL MOUNTAIN REST AREA REHABILITATION	LUMP SUM	\$227,707.00	\$283,685.00

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**STATUS: UNDER-EVALUATION**

ITEM NO.	DESCRIPTION	UNIT	Bidder	Bidder
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1	MINERAL MOUNTAIN REST AREA REHABILITATION	LUMP SUM	\$227,707.00	\$283,685.00

**Potential Bidders List**  
**Sheep Creek Rest Area Restoration**  
**Mineral Mountain Rest Area Restoration**

MARVEL CONSTRUCTION LLC PO BOX F 1613 RICHARDSON LEWISTON ID 83501 208 743 2553	ARNZEN BUILDING CONST PO BOX 447 COTTONWOOD ID 83522 208 962 3903	CMEC INC 2697 N STAR POST FALLS ID 83854 208 773 2949
A & R CONSTRUCTION PO BOX 881 LEWISTON ID 83501 208-746-3394 208-746-4857	TML CONSTRUCTION PO BOX 2970 HAYDEN ID 83835 208 762 3611 280 762 9732	REIBER CONSTRUCTION CO. 5340 MOMONT ROAD MISSOULA, MONTANA 59808 406 728-6338
COOKS INC 780 PINE STE 104 POST FALLS ID 83854 208-773-2563 208-773-5978	HOLCOMB CONSTRUCTION 109 N. COLLEGE GRANGEVILLE, IDAHO 83530 208 983-1942	JORDAN CONSTRUCTION 7187 HAPPY VALLEY RD KUNA ID 83634 208-465-4848
SE/Z CONSTRUCTION PO BOX 1469 IDAHO FALLS ID 83403 208-528-9449 208-528-2316	RELIABLE BUILDINGS INC PO BOX 1329 BONNERS FERRY ID 83864 208-267-2656	RIMAR CONSTRUCTION PO BOX 692 SANDPOINT ID 83864 208-263-9774
MCALVAIN CONSTRUCTION 5559 W GOWEN RD BOISE ID 83709 208 362 2125 208 362 4356	STORMKING CONST PO BOX 568 RATHDRUM ID 83858 208-687-2555	MOUNTAIN VIEW CONST PO BOX 113 ST MARIES ID 83861 208-245-7173 208-245-1065
KENASTON CORP 2517 Main St LEWISTON, ID 83501 208-746-1351		

**IDAHO TRANSPORTATION DEPARTMENT**  
**INVITATION TO BID**

**MINERAL MOUNTAIN REST AREA REHABILITATION**  
**REQUISITION NO. B – 499900S**

September 17, 2008

Idaho Transportation Department  
Business and Support Management Purchasing Unit  
3311 West State Street  
Boise, Idaho 83703

**REQUISITION #: B-499890S**

**ALL sealed bids must be received by 5:00 pm on October 2, 2008. Sealed bids will be opened at 10:30 am on October 3, 2008** at Business and Support Management Purchasing Unit, at 3311 West State Street in Boise. The scope of work consists of furnishing all materials, equipment and labor for the rehabilitation of the Mineral Mountain Rest Area building, located on US-95 at Milepost 370.52, in Latah County, Idaho.

**Public Works Contractor's License is required**

Contact Kathy Chase, Business & Support Manager for clarification of bid requirements at (208) 334-8752.

Contact Joe Schacker, P.E. Regional Engineer, Idaho Transportation Department District 2 for Technical Specifications and Clarifications at (208) 799-4233

**FOR BID RESULTS, PLAN HOLDERS LIST VISIT:**

**<http://itd.idaho.gov/business/business.htm>**

**Below the section titled: Bid and Contract Information**

**Select: ITD Goods and Services**

**RETURN BID IN A SEALED ENVELOPE CLEARLY MARKED AS SHOWN:**

<p><b>Requisition #: B-499900S</b> <b>Bid Close Date: 10/02/08 – 5:00 PM</b> <b>Bid Open Date: 10/03/08 – 10:30 AM</b> <b>Item Bidding: MINERAL MOUNTAIN REST AREA REHABILITATION</b></p>
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**Mailing Address**

Idaho Transportation Department  
Business and Support Management Purchasing Unit  
(3311 W State St – 83703)  
P.O. Box 7129  
Boise, Idaho 83707-1129

# MINERAL MOUNTAIN REST AREA REHABILITATION

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- Bid Schedule
- Signature Page
- Contractor's Affidavit
- Subcontractor's Form
- Bidder's Responsibility Page

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- Architectural Specifications
- Plan Sheets

**INVITATION TO BID  
MINERAL MOUNTAIN REST AREA REHABILITATION**

**REQUISITION NO. B-499900S**

**I. GENERAL INFORMATION**

**1. PURPOSE**

The purpose of this ITB is to solicit sealed bids to establish a contract between the Idaho Transportation Department (ITD) and a Contractor, for the rehabilitation of the Mineral Mountain Rest Area building located on US – 95, MP 370.52, Latah County, Idaho.

**2. SUMMARY SCOPE OF WORK**

The scope of work consists of the rehabilitation of the Mineral Mountain Rest Area building as shown on the attached Plan Sheets and described in the ITB Architectural Special Provisions and attached Architectural Specifications.

The dimensions specified are nominal and minor changes necessary to accommodate supplier's design may be accepted by the Engineer.

The Contractor shall furnish and install all necessary parts and accessories required for complete installation including and other items essential for the complete project.

**3. CONSTRUCTION REQUIREMENTS**

Design loads according to the 2006 International Building Code

Roof Snow Load: 40 PSF  
Wind Exposure B: 90 MPH, 3 section gust  
75 MPH, Fastest Mile  
Site Class: D  
Flood loads are non-applicable to this project.

All finish grading and site finish work 10'-0" outside of the roofline will be completed by ITD state forces. All finish grading and site finish work within 10'-0" of the outside roof line will be completed by the Contractor. The Contractor shall be responsible for the foundation excavation, utility trenching, boring, and backfill regardless of location.

**4. EXAMINATION OF SITE**

Before submitting a bid to the State, bidders are urged to visit the sites where the services are to be performed and full inform themselves of all the conditions and limitations. Failure to do so will in no way relieve the successful Contractor of the responsibility in furnishing sufficient equipment and personnel to perform all duties described in the specifications without additional cost to the State.

**5. PRE-CONSTRUCTION CONFERENCE**

After the Contract has been awarded and before work commences the Contractor shall meet with the Engineer and or his representative to discuss the Contract terms and work performance requirements. The meeting shall be held a minimum of 7 calendar days before the work commences.

## **6. EMPLOYMENT AGENCY**

The designated employment agency is the Idaho Department of Labor at Job Service, Lewiston, Idaho.

## **7. DAVIS-BACON WAGE RATES**

Davis-Bacon wage rates apply for any contract awarded as result of this invitation to bid. For current wage determinations, please check <http://wdol.gov/dba.aspx> . The application criteria is for the County of Latah, in the State of Idaho, construction type **Building**.

## **8. ISSUING OFFICE**

The contract will be issued and administered by ITD Purchasing Unit. All requests for information in regard to bid submission shall be submitted to:

Kathyren Chase  
Business and Support Manager  
Idaho Transportation Department  
P.O. Box 7129  
Boise, ID 83707-1129  
Phone: 208-334-8752

All requests for information in regard to the technical specifications and requirements shall be submitted to:

Joe Schacher, P.E.  
Regional Engineer, Idaho Transportation Department District 2  
P.O. Box 837  
Lewiston, ID 83501-0837  
Phone: 208-799-4233

## **9. CONSTRUCTION MANAGEMENT**

The contract work will be managed by ITD District 2. Once the Notice to Proceed is issued, all correspondence, submittals, invoices, etc. will be sent to the following address:

Joe Schacher, P.E.  
Regional Engineer, Idaho Transportation Department District 2  
P.O. Box 837  
Lewiston, ID 83501-0837  
Phone: 208-799-4233

All instruction regarding the work of the contract will be provided through this authority. No instruction from any other source is valid.

## **10. CPM SCHEDULE**

ITD requires that a Critical Path Method (CPM) schedule be used to guide the scope and progress of the project. The schedule shall show a breakdown of critical path work items from the beginning of the project through its completion. A Gantt chart showing these key tasks must also be included with the CPM schedule. Subsection 108.02 of the ITD's 2004 Standard Specifications for Highway Construction shall apply.

**11. METHOD OF MEASUREMENT**

Measurement will be on the lump sum basis for the rehabilitation of the rest area in accordance with the plans and specifications.

**12. BASIS OF PAYMENT**

The accepted quantities will be paid for at the contract unit price for the item listed below:

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Rest Area Rehabilitation At Mineral Mountain Rest Area	Lump Sum

## **II. ARCHITECTURAL SPECIAL PROVISIONS**

### **1. GENERAL**

The Contractor shall supplement the plans for such working drawings as are necessary to adequately control the work. Materials incorporated into this project shall be new and free from defects and of the best commercial quality for the purpose specified.

### **2. GUARANTEE**

Excepting where certain portions of the work call for a longer period, all work shall be guaranteed for a minimum period of one year after the date of final acceptance; during the guarantee period, any repairs or replacements required because of defective workmanship or material shall be at the Contractor's expense.

### **3. WARRANTIES, GUARANTEES AND INSTRUCTION SHEETS**

Three (3) copies of the manufacturer's warranties, guarantees, instruction sheets, and Part lists for all Contractors' furnished materials shall be turned over to ITD upon completion of the project.

### **4. PERMITS**

ITD will furnish the building permit, if required.

The Contractor shall obtain and pay for all other licenses and permits and shall pay fees and charges for connection to outside services to include, water sewer and electricity and use of public or private property for storage of materials, etc. The Contractor shall comply, without additional expense to ITD, with all State, County and Municipal building ordinances and regulations insofar as the same are binding upon the State. ITD will reimburse the Contractor for utility hookup fees at invoice costs.

### **5. CODES**

The Contractor, including subcontractors, shall submit their bid in accordance with plans and specifications. If plans and specifications do not comply with any codes having jurisdiction in that particular place or construction, the Contractor shall notify ITD prior to bidding in writing and sent to the address stated in the bid document. If prior notification is not given, it shall be assumed that the Contractor's base bid includes, to the best of their knowledge and experience, all work necessary to comply with such codes.

### **6. WORK NOT NOTED, DETAILED OR SPECIFIED**

All work required for complete installation or assembly shall be included in the Contractor's bid. Where minor portions of required work are not noted, detailed, or specified, such work shall be done in accordance with proven construction practice or accepted industry standards at no additional cost to the owner. The Contractor shall be held responsible for verification of existing job conditions prior to bid. No additional cost shall be awarded to the successful contractor (or their subcontractors) after bids have been submitted and contracts awarded for failure to verify existing field conditions. Discrepancies or questions arising between actual field conditions and contract documents shall be made in writing and faxed to the number stated in the bid document.

## **7. CLEANING UP BUILDING**

In addition to removal of rubbish and leaving the building rooms clean, the Contractor shall remove stains, spots, marks and dirt from decorated surfaces, clean hardware, remove paint spots and smears from all surfaces and clean fixtures, clean all glass; replace any broken glass.

## **8. PROTECTION**

The Contractor shall, at all times, protect building from damage; remove and replace with new work any work damaged by failure to provide protection. Replacement of damaged work will be at no additional cost to ITD.

The Contractor shall provide and maintain weather protection and heating as required for the protection of the work from the beginning of the work until final completion, acceptance, or occupancy. Methods and extent of protection and heating shall be subject to the Engineer.

## **9. PRIOR APPROVAL**

The references made to materials equipment, appliances or fixtures in the plans or materials list, where manufacturers' products or brand names are specified, are made to show standards for comparison only as to type, design character, or quality of the article desired, and are not for the purpose of restricting bidders to these products or brand names. The term "or equal" as used herein shall be understood to mean equal to that specified for fulfilling the intended requirements in the judgment of the Engineer. THE BURDEN OF PROVING THE EQUALITY SHALL BE THE CONTRACTOR'S RESPONSIBILITY. The Engineer's decision shall be final. Shop drawings or manufacturer's literature for the substitute item and for the specified item shall be submitted to support the Contractor's requests on all substitutions.

All requests for approval of change in design of function of materials specified must allow 14 days review time, after receipt of all necessary documents, by the Engineer. Approval of submittals shall not relieve the Contractor from responsibility for deviations from the plans or specifications, unless they have, in writing, called the Engineer's attention to deviations at the time of submission, and obtained the Engineer's written approval. Approval of submittals does not relieve the Contractor from responsibility for errors in shop drawings or literature.

## **10. SUBMITTALS**

A Minimum of five (5) complete submittals is required on all products, unless more are required in the Architectural Specifications.

Submittals shall contain the Project name and the following information:

1. Date of submission and dates of any previous submissions.
2. The names of the contractor, sub-contractor and manufacturer.
3. Contractors stamp, initialed or signed, certifying to review of submittal.
4. Identification of any deviation from Contract Documents.
5. Identify each submittal item by specification section, manufacturer, brand, trade name, number, size, rating, or whatever other data is necessary to properly identify and check materials and equipment. The words "as specified" are not sufficient identification.

## **11. AS-BUILT DRAWINGS**

The Contractor shall provide the Engineer with three (3) complete sets of as-built drawings. As-built drawings shall provide detailed and accurate sizes, dimensions and locations of all work items covered under this contract. Contractor shall instruct the separate trades to keep accurate measurements and records of their installation, as the work proceeds. No measurement or payment will be made for as-built drawings, but the cost thereof shall be considered incidental to the items of work under this contract.

## **12. OPERATION, MAINTENANCE INSTRUCTIONS AND MANUALS**

The Contractor shall train ITD personnel in the general use and maintenance of all installed equipment and accessories. The Contractor shall provide three complete copies of "Operations and Maintenance" manuals for ITD use. The manuals will identify all parts of equipment and show complete wiring diagrams. The manuals will include copies of warranties for all items.

## **13. DIMENSIONS AND MEASUREMENTS**

The Contractor shall field verify all dimensions pertaining to the work and shall be responsible for the determination of all quantities of materials required for the work and for the accuracy of all dimensions of materials and items fabricated for this project. The Contractor shall not rely on the scale drawings in the project drawings for the determination of exact quantities or dimensions.

## **14. COORDINATION AND CONTROL**

This work shall proceed in an effective sequence so as to eliminate unnecessary work stoppages at the building.

## **15. SUPERINTENDENT**

The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during the progress of work. The superintendent shall be satisfactory to the Engineer, and shall not be changed except with the consent of the Engineer unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in their employ. Under this circumstance, the new superintendent shall also be satisfactory to the Engineer. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. Important communications will be confirmed in writing.

## **16. ITD USE OF BUILDING**

ITD reserves the right to occupy and/or use the building or portions thereof, including portions during the construction period and prior to final acceptance. Such occupancy and/or use shall not constitute acceptance of the Work or any part thereof. The contractor shall take special care to insure that no unnecessary disruptions or normal routines will occur at the project work site. Access to and egress from buildings, grounds, services areas, drives, and streets shall be maintained at all times. Temporary disruptions of building services, equipment, etc... shall be scheduled with ITD. Normal functions shall be restored as quickly as possible. It is anticipated the rest area building may be closed to the public during a portion of the rehabilitation work.

### **III. BID GUIDELINES**

#### **1. INFORMATION GIVEN PRIOR TO AWARD**

Oral explanations, instructions and interpretations given to bidders prior to award of contract will not be binding. It is the Department's intent to provide all bidders equal opportunity to access and acquire all available pertinent information necessary to formulate a responsive bid. Any information, specifications, plans, data or interpretations which the Department discovers is lacking and may be important to all bidders, will be furnished to all bidders in the form of an addendum, the receipt of which shall be acknowledged.

#### **2. PERFORMANCE**

Submission of a bid by any Contractor shall be accepted as prima facie evidence that they have satisfied themselves as to the nature and location of the work and all other matters, which can in any way affect the work or cost thereof under the contract. Any failure of the Contractor to acquaint themselves with all available information, including a physical survey of the site of the proposed work, shall not relieve them from successfully performing all the work required.

#### **3. BIDDING REQUIREMENTS AND CONDITIONS**

Sealed Bids will be received at the time and place stated in this bid document. Timely receipt of Bids will be determined by the date and time the Bid is received at the address specified. Hand delivery is encouraged to ensure timely receipt. No bids will be accepted after the time indicated. All material that is submitted in accordance with this solicitation becomes the property of the State of Idaho and will not be returned.

The bidder shall submit their bid upon the forms furnished by the Department. The bidder shall complete the bid schedule as noted in this bid document. In the event of a discrepancy between unit bid prices and extensions, the unit bid price shall govern. All figures shall be written in ink or typed. Penciled entries will not be accepted. If entries are in pencil, the bid shall be considered irregular and the bid will be rejected.

The bidder's bid shall be signed with blue ink by the individual, by one or more members of the partnership, by one or more members or officers of each firm representing a joint venture, by one or more officers of a corporation, or by an agent of the bidder legally qualified and acceptable to the State. If the bid is made by an individual, their name and post office address shall be shown; by a partnership, the name and post office address of each partner shall be shown; as a joint venture, the name and post office address of each member or officer of the firms represented by the joint venture shall be shown; by a corporation, the name of the corporation and the business address of its corporate officials shall be shown.

#### **4. IRREGULAR BIDS**

Bids will be considered non-responsive and shall be rejected for the following reasons:

1. If the Bid Form(s) are on a form other than that furnished by the State or if the form is altered or any part thereof is detached.

2. If there are unauthorized additions, conditional or alternate bids, omission of addenda, or irregularities of any kind, which tend to make the bid incomplete, indefinite, or ambiguous as to its meaning.
3. If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.
4. If the Bid Schedule does not contain a unit price for each pay item listed except in the case of alternate pay items.
5. If the Bid Documents are not sealed, when received by the Department.
6. If the Signature Page is not signed in **BLUE** ink.
7. If Addendums are not **signed, dated** and returned with the Bid Documents.
8. If the required, **Public Works** License Number(s) is not inserted on the Signature Page.
9. If the contractors Federal Identification number is not inserted on the Signature Page.

## **5. DISQUALIFICATION OF BIDDERS**

Any of the following reasons may be considered as being sufficient for the disqualification of a bidder and the rejection of their bid or bids:

1. More than one bid, for the same work from an individual, partnership or corporation under the same name or a different name.
2. Evidence of collusion among bidders. Participants in such collusion will receive no recognition as bidders for any future work of the State until any such participant shall have been reinstated as a qualified bidder.

## **6. BID GUARANTY / SURETY BOND REQUIREMENTS**

No bid will be considered unless accompanied by a guaranty of the character and in an amount not less than the amount indicated on the Bid.

If a surety bond is used, it shall be submitted on an acceptable form signed by the bidder and their surety company. Power of Attorney for the person who executes the bond on behalf of the surety as Attorney-In-Fact must accompany the bid bond.

The lowest responsive bidder shall furnish a performance bond and a payment bond each in the amount of the contract.

The lowest responsive bidder may deposit government obligations in lieu of performance and payment bonds under the following conditions:

1. The obligations shall be acceptable to the State Treasurer.
2. The obligations shall be payable to, or fully negotiable by, the Department.

3. The obligation shall be in an amount equal at fair market value to the penal sum of the required surety bonds.
4. The bidder pays the initial and return transfer charges for transmittal of the obligation of the Treasurer's Office.

Within **90 days** after final completion of the contract those obligations deposited, as a performance bond will be returned, less any amount owed to the Department as a result of this contract. Obligations deposited, as the payment bond shall be held for a period of one year from the date of acceptance of the contract for settlement of claims in accordance with Idaho Code, Section 54-1927.

Government obligations shall be deposited with the State Treasurer with instructions to issue a safe keeping receipt to the Department.

## **7. CONSIDERATION OF BIDS AND METHOD OF CONTRACT AWARD**

After the bids are opened and read, they will be compared on the basis of the summation of the products of the approximate quantities shown in the bid schedule by the unit bid prices. The results of such comparisons will be available at <http://itd.idaho.gov>, "*Doing Business with ITD, Bid and Contractor Information, ITD Goods and Services*". ITD reserves the right to reject any or all bids, to waive technicalities, to advertise for new bids, or to proceed to do the work otherwise, if, in the judgment of the Department, and is in the best interest of the State.

## **8. EXECUTION / AWARD OF THE CONTRACT**

The award of contract, if it is awarded, will be made within **15 calendar days** after the Intent to Award Notice letter has been mailed to the lowest responsive bidder whose bid complies with all requirements prescribed.

However, the award may be deferred beyond **15 calendar days** by mutual written agreement between the Department and the lowest responsive bidder.

The contract shall be signed by the lowest responsive responsible bidder and returned together with the Surety bonds, **within 15 calendar days** after the bidder has received the contract. If the contract is not executed by the State **within 15 calendar days** following receipt from the bidder of the signed contracts and bonds, the bidder shall have the right to withdraw their bid without penalty. No contract shall be considered as effective until it has been fully executed by all of the parties thereto.

## **9. FAILURE TO EXECUTE CONTRACT**

Failure to execute the contract and file acceptable bonds within **15 calendar days**, after the contract has been received by the bidder, shall be just cause for the cancellation of the award of contract and the forfeiture of the bid guaranty which shall become the property of the State, not as a penalty, but in liquidation of damages sustained. Award may then be made to the next lowest responsible bidder or the work may be re-advertised or otherwise, as the Department may decide.

## **10. RETURN OF BID GUARANTY**

Bid guaranties, except those of the two lowest responsive bidders, will be returned immediately following the opening and checking of the bids. The retained bid guaranty of the unsuccessful of the two lowest responsive bidders will be returned within 10 days following the award of contract and that of the successful bidder will be returned after satisfactory Surety bonds have been furnished and the contract has been executed.

## **IV. TERMS AND CONDITIONS**

### **1. STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION**

The Standard Specifications for Highway Construction (ITD 2004), the January 2008 Supplemental Specifications, the January 2008 Quality Assurance Manual, the QA Special Provisions and the FHWA-1273 Federal Aid Contract Provisions are incorporated by reference where applicable to this contract. Where general and supplementary conditions and Section 100 specification sections are referred to; current industry standards shall be followed. Department shall be construed to mean the State of Idaho through the Idaho Transportation Department (ITD). The Idaho Transportation Department's Standard Specifications for Highway Construction manual is available to the Contractor for \$30.00 plus tax. Contact the Idaho Transportation Department at 334-8430 to purchase.

### **2. CONTRACT ADMINISTRATION**

Unless otherwise modified by this Invitation to Bid, the contract and work for the project shall be administered in accordance with ITD's 2004 Standard Specifications for Highway Construction. The most current version of ITD's Supplemental Specifications to the 2004 Standard Specifications shall also apply.

The Resident Engineer is responsible for administering the terms of the contract, measuring the work, and maintaining appropriate records.

### **3. DELIVERABLE – CPM SCHEDULE**

The Preconstruction Conference will be held no less than 15 days after the Contractor receives the notice to proceed. At the Preconstruction Conference, the Contractor shall submit the CPM schedule, a Gantt chart, a list of material suppliers, subcontractors, and other data requested. Subsection 108.03 of ITD's 2004 Standard Specifications for Highway Construction shall apply. ITD's Resident Engineer in charge of administering the project shall review the schedule and either approve it or recommend pertinent revisions. The project's CPM schedule shall be updated monthly, as per subsection 108.02 of the Standard Specifications.

### **4. CONTRACT TIME AND LIQUIDATED DAMAGES**

The time of this Contract will be based on the furnished and approved CPM schedule. The work on the project is to be completed within 3 months after the project is started and no later than May 21, 2009. Liquidated damages will be assessed to the contractor at the rate of \$900.00 per day for each day the work exceeds the approved completion date.

### **5. SUBLETTING / SUBCONTRACTING OF CONTRACT**

The Contractor will be permitted to sublet / subcontract a portion of the work but shall perform with the Contractor's own organization, work amounting to not less than 20 percent of the total original contract cost, per ITD Standard Specifications, Section 108 – Prosecution, Progress and Termination.

### **6. PAYMENT REQUIREMENTS**

Payments will be made as provided. Upon satisfactory completion of services specified, the Contractor may be paid monthly and after receipt of invoices. Payments otherwise due may be withheld for substandard or defective work not remedied.

## **7. CHANGES**

The Department reserves the right to revise the "Work Locations and Schedule" and to make other changes within the general Scope of Work as may be deemed necessary to best serve the interests of the Department. Changes in compensation, which may result from such revisions, shall be documented by formal Change Order to the contract and approved by the District Engineer and Purchasing Agent.

## **8. CLAIMS FOR ADJUSTMENT AND DISPUTES**

If the Contractor believes that additional compensation is due them for work or material not clearly covered in the contract, or not ordered as extra work, as defined herein, they shall prosecute their claim in the following manner.

Prior to doing the work on which they believe additional compensation is due them, the Contractor shall notify the District Engineer in writing of their intent to file a claim. If such notification is not given, then the Contractor shall thereby waive their right to any claim for such additional compensation.

At a minimum, the detailed letter shall include a narration of events, citing of entitlement and a showing of the amount of compensation and/or adjustment of time believed due. Full documentation for all elements in the letter shall be included. The claim will be considered and a determination made. The District Engineer will notify the Contractor in writing of the decision.

The decision will be final and conclusive unless, within thirty (30) days from receipt of the District Engineer, the Contractor submits an appeal in writing to the Department Purchasing Agent. All pertinent information, references, arguments and data to support the claim shall be included. The Purchasing Agent will review the claim and the Contractor will be notified by mail. This decision will be final and conclusive. Pending final decision of a dispute hereunder the Contractor shall proceed diligently with performance of the contract.

## **9. FORCE MAJEURE**

Neither party shall be liable or deemed to be in default for any Force Majeure delay in shipment or performance occasioned by unforeseeable causes beyond the control and without the fault or negligence of the parties, including, but not restricted to, acts of God or the public enemy, fires, floods, epidemics, quarantine, strikes, freight embargoes, or unusually severe weather, provided that in all cases the Contractor shall notify the State promptly in writing of any cause for delay and the State concurs that the delay was beyond the control and without the fault or negligence of the Contractor. The period for the performance shall be extended for a period equivalent to the period of the Force Majeure delay. Matters of the Contractor's finances shall not be a Force Majeure.

## **10. COMPLIANCE**

If the Department registers a formal and written complaint by certified mail, with the Contractor in respect to undesirable or unsatisfactory conditions, the Contractor will have 72 hours in which to respond in person to the complaint, to the District Contract Administrator to remedy the problem(s). Failure to respond in the prescribed time to the complaint or to remedy the problem may result in termination of the contract as provided in Section 11 TERMINATION.

If the Department is not satisfied with the results and remediation of the complaint, the District Contract Administrator may require periodic and joint inspections of the area with the Contractor to discuss and point out Contractors violations. Failure of the Contractor to attend these inspections may result in termination of the contract.

## **11. TERMINATION**

Should the Contractor neglect to prosecute the work properly, or fails to perform any provision of the contract, the Department, after seven (7) days from written notice to the Contractor, may without prejudice to any other remedy they may have, make good the deficiencies and may deduct the cost thereof from the payment then or thereafter due to the Contractor or, at its option, may terminate the contract and take possession of all materials, tools, fixtures and furnish the work by such means as the Department sees fit, and if the unpaid balance of the contract price exceeds the expense of finishing the work, such excess shall be paid to the Contractor, but if such expense exceeds such unpaid balance, the Contractor's surety shall pay the difference to the Department.

## **12. INDEMNIFICATION**

The Contractor shall indemnify, save harmless, and defend regardless of outcome, the State from the expenses of and against all suits, actions, claims, or costs, expenses, and attorney fees that may be incurred because of any injuries or damages received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in the work; or because of any act or omission, neglect, or misconduct of the Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the Worker's Compensation Act or any other law, ordinance, order or decree.

## **13. ILLEGAL ALIENS**

The contractor warrants that any contract resulting from this solicitation is subject to Executive Order 2006-04 ([http://gov.idaho.gov/mediacenter/execorders/eo06/eo\\_2006-40.html](http://gov.idaho.gov/mediacenter/execorders/eo06/eo_2006-40.html)); it does not knowingly hire or engage any illegal aliens or persons not authorized to work in the United States; it takes steps to verify that it does not hire or engage any illegal aliens or persons not authorized to work in the United State; and that any misrepresentation in this regard or any employment of person not authorized to work in the United States constitutes a material breach and shall be cause for termination of its contract.

## **14. INSURANCE REQUIREMENTS**

The Contractor shall carry such public liability and property damage insurance that will protect them and the State of Idaho from claims for damages for bodily injury, including accidental death, as well as for claims for property damages, which may arise from operations under the contract whether such operations be by themselves or by anyone directly or indirectly employed by either of them.

The Contractor shall not commence work under the contract until he obtains all insurance required under this provision and furnishes a certificate or other form showing proof of current coverage to the State. All insurance policies and certificates must be signed copies. After work commences, the Contractor will keep in force all required insurance until the contract is terminated.

The following is a brief explanation of the required insurance coverage's.

1. Worker's Compensation. The CONTRACTOR and all employers providing work, labor or materials under this contract, are subject employers under the Idaho Worker's Compensation Law, and shall comply with Idaho Statutes regarding Worker's Compensation.

For the duration of this Contract, and until all work specified herein is complete, the CONTRACTOR and all employers providing work, labor or materials under this contract, shall provide Idaho Worker's Compensation coverage that satisfies Idaho law for all their subject workers.

The CONTRACTOR must provide either a Certificate of Idaho Workers' Compensation Insurance issued by a surety licensed to write Idaho Workers' Compensation Insurance in the State of Idaho, as evidence that the CONTRACTOR has in effect a current Idaho Workers' Compensation Insurance policy, or an extraterritorial certificate approved by the Idaho Industrial Commission from a State that has a current reciprocity agreement with the Industrial Commission.

2. Employer's Liability. This coverage is written in conjunction with Worker's Compensation and provides insurance for the employer's liability to its employees in circumstances where the injury is not covered by the Worker's Compensation law and the employer may be subject to common law liability. Employer's liability insurance shall be a minimum amount of \$100,000 per occurrence.
3. Liability Insurance. For the duration of the Contract and until all work specified in the Contract is completed, the CONTRACTOR shall have and maintain, at CONTRACTOR'S expense, the liability insurance set forth below and shall comply with all limits, terms and conditions of such insurance. Work under this Contract shall not commence until evidence of all required insurance is provided to the Department. Evidence of insurance shall consist of a completed certificate of insurance signed by the insurance agent for the CONTRACTOR and made a part of this Contract.
4. Commercial General Liability Insurance. The CONTRACTOR shall have and maintain Commercial General Liability (CGL) Insurance covering bodily injury and property damage. This insurance shall include personal injury liability coverage; blanket contractual liability coverage for the indemnity provided under this Contract and products/completed operations liability. The combined single limit per occurrence shall not be less than \$1,000,000 or the equivalent. Each annual aggregate limit shall not be less than \$1,000,000, when applicable, and will be endorsed to apply separately to each job site or location.
5. Automobile Liability Insurance The Contractor shall obtain, at the Contractor's expense, and keep in effect during the entire term of the contract, Automobile Liability Insurance covering owned, non-owned and hired vehicles. This coverage may be written in combination with Commercial General Liability Insurance. Combined single limit per occurrence shall not be less than \$1,000,000.

Additional Requirements:

State of Idaho as Additional Insured: The liability insurance coverage required for performance of the Contract shall include the State of Idaho, the Idaho Transportation Department and its division, officers and employees as additional insured, but only with respect to the CONTRACTOR'S activities to be performed under this Contract.

Notice of Cancellation or Change: The CONTRACTOR shall ensure that all policies of insurance are endorsed to read that there shall be no cancellation, material change, potential exhaustion of aggregate limits or intent not to renew insurance coverage(s) without sixty (60) days prior written notice from the CONTRACTOR or its insurer to the Idaho Transportation Department. CONTRACTOR shall further ensure that all policies of insurance are endorsed to read that any failure to comply with the reporting provisions of this insurance, except for the potential exhaustion of

aggregate limits, shall not affect the coverage(s) provided to the State of Idaho, Transportation Department and its divisions, officers and employees.

#### **APPENDICES**

- Bid Schedule
- Signature Page
- Contractor's Affidavit
- Subcontractor's Form
- Bidder's Responsibility Page

#### **ATTACHMENTS**

- Architectural Specifications
- Plan Sheets

**BID SCHEDULE**

**MINERAL MOUNTAIN REST AREA REHABILITATION  
REQUISITION NO. B – 499900S**

**BIDDER:** \_\_\_\_\_

The bid item shall be filled in completely by the bidder in the bid schedule, by indicating total dollars and cents under the Total Amount Bid. All costs, including hourly rates will be included here and will be fully burdened to include; but not limited to, wages, transportation, lodging, overhead, and per-diem.

All of the items shown or noted on the plans or in these specifications, which are not specifically a bid item, are considered incidental items. The cost of furnishing and installing all incidental items will not be paid for separately, but shall be included in the contract unit prices as bid, unless otherwise noted.

All figures should be written in ink or typed. Penciled entries will not be accepted; bids will be considered irregular and rejected.

ITEM NO.	DESCRIPTION	UNIT	TOTAL AMOUNT BID
1	MINERAL MOUNTAIN REST AREA REHABILITATION	LUMP SUM	

**AWARD TO BE ALL "OR NONE"**

**THIS PAGE MUST BE SIGNED IN BLUE INK & RETURNED WITH YOUR BID**

**Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**IDAHO TRANSPORTATION DEPARTMENT**  
**SIGNATURE PAGE**

September 17, 2008

Idaho Transportation Department  
Business and Support Management Purchasing Unit  
3311 West State Street  
Boise, Idaho 83703

**REQUISITION #: B 499900S**

**TITLE: MINERAL MOUNTAIN RA REHABILITATION**

This ITB response is submitted in accordance with all documents and provisions of the specified Bid Number and Title detailed above. By my signature below I accept the terms and conditions as incorporated into this solicitation. As the undersigned, I certify I am authorized to sign and submit this response for the Bidder or Offeror.

PUBLIC WORKS CONTRACTORS LICENSE # \_\_\_\_\_

FEDERAL IDENTIFICATION # \_\_\_\_\_

Company Name: \_\_\_\_\_

State of Domicile: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

If not domiciled in the State of Idaho, please provide an address where business is conducted in the State of Idaho:

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Bidder Signature/Authorized Signature

\_\_\_\_\_  
Name (Please Print) \_\_\_\_\_

BY SIGNING, BIDDER ACKNOWLEDGES ITS RESPONSIBILITY FOR ANY ADDENDA THAT HAVE BEEN ISSUED FOR THIS SOLICITATION AND WILL COMPLY WITH ALL THE TERMS, CONDITIONS, AND SPECIFICATIONS OF THIS SOLICITATION.

**THIS PAGE MUST BE SIGNED, WITH AN ORIGINAL SIGNATURE, AND RETURNED WITH YOUR BID DOCUMENTS!**

**CONTRACTOR'S AFFIDAVIT**  
**CONCERNING ALCOHOL AND DRUG-FREE WORKPLACE**

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

The undersigned being duly sworn upon oath, deposes and says that

\_\_\_\_\_ complies with the provisions of Section 72-1717 Idaho

(Contractor Name)

Code (Drug Free Workplace program); that \_\_\_\_\_ provides a

(Contractor Name)

drug-free workplace program that complies with the provisions of Idaho Code, Title 72,  
Chapter 17 and will maintain such program throughout the life of a state construction contract  
and that \_\_\_\_\_ shall subcontract work only to subcontractors meeting

(Contractor Name)

the requirements of Idaho Code, Section 72-1717(1) (a).

\_\_\_\_\_  
Name of Contractor

\_\_\_\_\_  
Address

By: \_\_\_\_\_  
(Signature)

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 2008

\_\_\_\_\_  
NOTARY PUBLIC for \_\_\_\_\_

Residing at \_\_\_\_\_

My commission expires on: \_\_\_\_\_

**THIS PAGE MUST BE RETURNED WITH YOUR BID DOCUMENTS**

**LICENSE REQUIREMENTS FOR  
PLUMBING, ELECTRICAL, AND HVAC WORK**

The contractor must complete this form giving the name, address, and Public Works Contractors License Number for any and all companies who shall, in the event the Contractor secures the contract, complete the plumbing, electrical, or HVAC work under the contract in accordance with Idaho Code Section 67-2310. Failure to complete this form as required may render any such bid submitted by a contractor unresponsive and void.

Companies must possess an appropriate Idaho Public Works Contractors License issued by the State of Idaho Public Works Contractors State License Board covering the contract work classification in which they are named, except as stated in Subsection.107.03-Licensing of Contractors.

The following are the names, addresses, Public Works Contractors license numbers, and contract amounts of the Contractor or Subcontractor(s) who shall do the plumbing, electrical, or HVAC work under the contract.

Note: Idaho Code Section 67-2310 also states "No general contractor shall name any subcontractor in his bid unless the general contractor has received communication from the subcontractor.

A. **Plumbing work by:** \_\_\_\_\_ residing  
at: \_\_\_\_\_, whose Idaho Public Works Contractors License  
No. is: \_\_\_\_\_, whose State Plumbing Bureau License No. is: \_\_\_\_\_  
Contract Amount: \$\_\_\_\_\_.

B. **Electrical work by:** \_\_\_\_\_ residing  
at: \_\_\_\_\_, whose Idaho Public Works Contractors License  
No. is: \_\_\_\_\_, whose State Electrical Bureau License No. is: \_\_\_\_\_,  
Contract Amount: \$\_\_\_\_\_.

C. **HVAC work by:** \_\_\_\_\_ residing  
at: \_\_\_\_\_, whose Idaho Public Works Contractors License  
No. is: \_\_\_\_\_ Contract Amount: \$\_\_\_\_\_.

**THIS PAGE MUST BE SIGNED & RETURNED WITH YOUR BID DOCUMENTS**

**SIGNATURE:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

## BIDDERS RESPONSIBILITY PAGE

**PLEASE NOTE:** the following documents, IF APPLICABLE TO YOUR BID, must be returned to the Idaho Transportation Department Purchasing Unit to allow your bid to be considered.

In order for your bid to be considered, the following must be included with your bid.

- 1) Affidavit of Alcohol and Drug Free Workplace Program
- 2) **“Signature Page”**
  - Public Works License Number must be inserted
  - Page signed with an original signature in blue ink
- 3) **Bid Schedule** must be completed and signed with an original signature in blue ink
- 4) A 5% Bidders Bond or 5% Cashier's Check.
- 5) Subcontractors Form must be completed and signed with an original signature in blue ink.
- 6) **All Addenda** Must be Signed (in blue ink) and returned with your Bid Documents.  
It is the Bidder's responsibility to verify if an addendum was issued.
- 7) **ALL BIDS** must be submitted in a sealed enveloped with the Requisition Number, Bid Open Date, and Project Name clearly marked on the outside of the envelope.
- 8) **NO BID ADJUSTMENTS WILL BE ACCEPTED:** Any changes made to a bid must be submitted as a separate bid and all rules remain in effect. ALL REQUIRED paperwork must be re-submitted.

# **MINERAL MOUNTAIN REST AREA UPGRADE LEWISTON, IDAHO**

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## **SECTION 02051-DEMOLITION**

### PART 1 GENERAL

- 1.1 The work covered in this section shall include, but is not limited to, the demolition as shown on the drawings and as specified herein.

Demolition work includes, but is not limited to, the following:

Refer to Demo plan sheet A1.

Also included is any and all demolition required to comply with the intent of the project, including removal of debris and materials.

- 1.2 Traffic: Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, sidewalks and other adjacent occupied or used facilities.

Do not close or obstruct streets, sidewalks or other occupied or used facilities. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

Protection: Ensure safe passage of persons around the area of demolition. Conduct operation to prevent injury to adjacent buildings, structures, other facilities and persons. Coordinate all activities with on site facility manager. Rest area will be closed during construction. Coordinate with district. Porta Potties will be installed.

- 1.5 Submittals: Contractor to submit written proposal on methods and operation of demolition work to the Architect for review prior to commencing work. Include in the proposal the schedule and coordination of shut-off, capping and protection of existing utilities.

### PART 2-MATERIALS (NOT APPLICABLE)

### PART 3 EXECUTION:

### 3.1 General

The Contractor shall survey the site before commencing work and shall perform all demolition work necessary for the proper execution of the work under this contract.

Protection of adjacent work must be accomplished. The Contractor shall provide necessary barricades to protect the public and employees and comply with all local and state requirements. The Contractor shall protect all existing utilities and adjacent property.

- 3.2 Utility Company Notification: The Contractor shall notify any utility company 48 hours prior to any interruption of the service of that company if the work will in any way interrupt the service. Should the utility company have adequate reason to avoid the interruption at the scheduled time, the Contractor shall reschedule his work to meet the condition. The Contractor shall pay the cost of restoring any active utility whose service is interrupted.

**END OF SECTION 02051-DEMOLITION**

## **SECTION 03010-CONCRETE**

### PART 1-GENERAL

- 1.1 Work includes all material, labor and accessories required to complete the concrete work as shown on the drawings and specified herein.
- 1.2 Codes and Standards:

ACI 301 "Specifications for Structural Concrete Buildings" and ACI 318 "Building Code Requirements for Reinforced Concrete".

Comply with applicable provisions except as otherwise indicated.

- 1.3 Concrete Testing Service: None required
- 1.4 Quality Control: Contact Architect before pouring concrete
- 1.5 Submittals

Product Data: Submit manufacturer's product data with installation instructions for proprietary materials including reinforcement and forming accessories, admixtures, joint materials, hardeners, curing materials and others as requested by Architect.

### PART 2-MATERIALS

#### 2.1 Form Materials

Provide form materials with sufficient stability to withstand pressure of placed concrete without bowing or deflection.

Exposed Concrete Surfaces: Suitable material to suit project conditions.

#### 2.2 Reinforcing Materials

Deformed Reinforcing Bars: ASTM A 615, Grade 60, deformed for #4 and larger, unless noted otherwise. ASTM A 615, Grade 40, deformed for #3 and less.

Welded Wire Fabric: ASTM A 82 and A 185, welded steel wire fabric.

### 2.3 Concrete Materials:

Portland Cement: Class 30 per ITD Specs, type as required, 3,000 PSI 28-day compressive strength.

Aggregates: ASTM C 33, except local aggregates of proven durability may be used when acceptable to Architect.

Water: Clean, drinkable.

Air-Entraining Admixture: ASTM C 260.

Water-Reducing Admixture: ASTM C 494. Only use admixture which have been tested and accepted in mix designs, unless otherwise acceptable.

### 2.4 Mix Proportions and Design:

Proportion mixes by either laboratory trial batch or field experience method complying with ACI 310.

Submit written report to Architect for each proposed concrete mix at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed and are acceptable to Architect.

Mix designs may be adjusted when material characteristics, job conditions, weather, test results or other circumstances warrant. Do not use revised concrete mixes until submitted to and accepted by Architect.

Use air-entering admixture in all concrete, providing not less than four percent (4%) nor more than eight (8%) entrained air for concrete exposed to freezing and thawing, and from two percent (2%) to four (4%) for other concrete

## PART 3-EXECUTION

### 3.1 Forming and Placing Concrete

Job-Site Mixing: Use drum type batch machine mixer, mixing not less than 1-1/2 minutes for one cu. yd. or smaller capacity. Increase mixing time at least 15 seconds for each additional cu. yd. or fraction thereof.

Ready-Mix Concrete: ASTM C 94.

### 3.2 Formwork

Construct so that concrete members and structures are of correct size, shape, alignment, elevation and position.

Provide openings in formwork to accommodate work of other trades. Accurately place and securely support items built into forms.

Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Tighten forms during concrete placement if required to eliminate mortar leaks.

### 3.3 Reinforcement

Position, support and secure reinforcement against displacement. Locate and support with metal chairs, runners, bolsters, spacers and hangers, as required.

Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

### 3.4 Joints

Provide construction, isolation, and control joints as indicated or required for slabs and foundation walls. See drawings for location and construction of isolation and control joints.

Locate construction joints so as to not impair strength and appearance of structure.

Construct 1/2" isolation (expansion) joints in slabs-on-grade at points of contact between slabs on grade and vertical surfaces, such as column pedestals, foundation walls, grade beams and elsewhere as indicated.

See Section 07900-Joint Sealer for joint filler and sealant materials.

### 3.5 Installation of Embedded Items

Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by cast-in-place concrete.

Use setting diagrams, templates and instructions provided by others for locating and setting.

### 3.6 Concrete Placement

Comply with ACI, placing concrete in a continuous operation within planned joints or sections.

Do not begin placement until work of other trades affecting concrete is completed.

Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping, so that concrete is worked around reinforcement and other embedded items and into forms.

Protect concrete from physical damage of reduced strength due to weather extremes during mixing, placement and curing. Comply with ACI 318 for cold weather and hot weather placement.

### 3.7 Concrete Finishes

**Exposed-to-view Surfaces:** Provide a smooth finish for exposed concrete surfaces and surfaces that are to be covered with a coating or covering material applied directly to concrete. Remove fins and projections, patch defective areas with cement grout, and rub smooth.

**Slab Trowel Finish:** Apply trowel finish to monolithic slab surfaces that are exposed-to-view or are to be covered with resilient flooring, paint or other thin film coating. Consolidate concrete surfaces by finish troweling, free of trowel marks, uniform in texture and appearance. Match adjacent sidewalk finish.

Recess concrete at new slab for installation of tile. Finish concrete at tile areas for mortar adherence.

### 3.8 Curing

Begin initial curing as soon as free water has disappeared from exposed surfaces. Where possible, keep continuously moist for not less than seventy-two (72) hours. Continue curing by use of moisture-retaining cover or membrane-forming curing compound.

Cure formed surfaces by moist curing until forms are removed.

Provide protections as required to prevent damage to exposed concrete surfaces.

**END OF SECTION 03010-CONCRETE**

## **SECTION 04200-UNIT MASONRY**

### PART 1-GENERAL

1.1 Work includes all material, labor and accessories needed to install the unit masonry as indicated on the drawings and specified within this section.

1.2 Related Work Specified Elsewhere: Division 1 Sections, Section 03010-Concrete, Section 04230-Reinforced Unit Masonry, and Section 09900-Painting. Refer to Painting Section 09900 for refinish of existing brick.

#### 1.3 Quality Assurance

Obtain each type of masonry units from a single manufacturer to insure uniform quality and color. Obtain mortar materials from a single manufacturer (or source).

Comply with the recommendations of Brick Institute Of America (BIA) and National Concrete Masonry Association (NCMA).

#### 1.4 Submittals

Submit manufacturer's product data for each type of masonry unit, accessory and other manufactured products, including certification that each type complies with specified requirements.

Submit small scale unit masonry samples for each type of exposed masonry unit required showing the texture and color.

#### 1.5 Delivery, Storage and Handling

Deliver masonry materials to the site undamaged. Store materials to prevent damage due to moisture, temperature change, contaminants, corrosion or other causes.

#### 1.6 Project Conditions

Protect work during erection by covering top of walls with waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress.

Do not apply uniform floor or roof loading for at least 12 hours after building walls or columns, for concentrated loads wait at least 72 hours.

Protect faces of masonry to be left exposed, sills, ledges and projections from staining due to rain, mud, grout and mortar.

Do not lay masonry units which are wet or frozen. Remove any ice or snow by carefully applying heat until top surface is dry to touch.

If installed during cold weather, less than 40°F, heat mixing water, sand and grout as required. If necessary heat masonry units, wall under construction and provide enclosures and auxiliary heat.

Protect unfinished masonry work not being worked on.

## PART 2-MATERIALS

2.1 General: Comply with the referenced standards and other requirements indicated below for each material type.

2.2 Concrete Masonry Units: Existing units are 8 x 16 x 4". Restroom partitions are 4"x16"x4". Units are integral colored. Contractor to visit site and match unit & grout color. Wall caps to be solid. Masonry units are to match existing.

2.3 Grout and Mortar Materials

Portland Cement: ASTM C 150, Type I (Type III may be used for cold weather construction)

Mortar: ASTM C 270, Type S, min. compressive strength of 1800 psi at 28 days.

Hydrated Lime: ASTM C 207, Type S.

Aggregate for Grout: ASTM C 404

Water: Clean and Potable.

2.4 Joint Reinforcement, Ties and Anchoring Devices

Hot-Dip Galvanized Steel Wire: ASTM A 82 wire with ASTM A 123, Class B-2 (1.5 oz. per s.f. of wire surface) zinc coating applied after fabrication, for use in masonry exposed to weather.

Joint Reinforcing: Refer to drawings for rebar. Rebar to be grade 40. Lap min. 30 diameters. Minimum cover to be 1 1/2".

Brick Ties: "Dur-A-Wall" D/A 213 14 gauge plate anchor with 3/16" dia. wire pintle or approved equal for steel stud construction. Use (2) D/A 808 screws per anchor.

Bent Wire Ties: 3/16" cold-drawn steel wires, rectangular shaped not less than 2" wide of length required for embedment of tie into face shells with not less than 5/8" mortar cover.

Anchor Bolts: ASTM A 307, Grade A, hot dipped galvanized complying with ASTM C 153, steel bolts with hex nuts and flat washers.

Miscellaneous Anchoring Items: Provide industry standard, incidental materials as required to complete the project.

## 2.5 Miscellaneous Masonry Accessories

Non-Metallic Expansion Joint Strips: ASTM D 1056, premolded, flexible cellular neoprene rubber filler strips, capable of 35% compression.

Premolded Control Joint Strip: ASTM D 2287, General Purpose Grade, designed to fit standard sash block and to maintain lateral stability in masonry wall.

Bond Breaker Strips: ASTM D 226, Type I, #15 asphalt felt.

## 2.6 Mortar and Grout Mixes

General: Do not add admixtures, including air-entraining agents, accelerators, anti-freeze compounds, etc. to mixes. Combine and thoroughly mix cementitious, water and aggregates in a mechanical batch mixer, comply with applicable ASTM standards for mixing time and water content.

Mortar for Unit Masonry: Comply with ASTM C 270 proportion specification for the types of mortar required, unless otherwise indicated use Type N.

Grout for Unit Masonry: Comply with ASTM C 476 for grout for use in construction of unreinforced unit masonry. Use grout of consistency (fine or course) at time of placement which will completely fill all spaces intended to received grout.

### PART 3-EXECUTION

#### 3.1 General

Install (lay) masonry units in the stack bond pattern to match existing.

Cut exposed masonry units, where necessary, with a power saw. Avoid the use (by proper layout) of less than half size units. Wet brick for high absorption, prior to laying.

#### 3.2 Joints

Hold uniform joint sizes as indicated, or if not indicated, hold joint sizes to suit modular size of masonry units.

Cut joints flush and tool slightly concave, unless otherwise indicated.

#### 3.3 Cavities

Keep cavities without rebar clean of mortar droppings. Fill hollow cells with vermiculite insulation.

#### 3.4 Finish

Provide control and expansion joints per industry standards, keep free of mortar droppings. Refer to drawings for locations of control joints.

Provide concealed flashing in exterior masonry work as indicated or as required for proper installation.

Except as otherwise shown, provide flashing under copings and sills, through walls at counterflashing locations and above elements of structural support for masonry.

Fit masonry units around items built-into the wall. Anchor items securely and fill spaces between the item and the masonry solidly with grout.

Fill six (6) courses twenty-four inches (24") in hollow masonry units under all bearing plates, bonded beams and similar areas, unless indicated otherwise.

Protect newly laid masonry from exposure to precipitation, excessive drying, freezing, soiling, backfill and other harmful elements.

### 3.5 Cleaning

Dry-Brush masonry work at the end of each day.

Final Cleaning: Upon completion of all masonry work, brick shall be cleaned with in compliance with manufacturer's recommendation.

**END OF SECTION 04200-UNIT MASONRY**

## **SECTION 04230-REINFORCED UNIT MASONRY**

### PART 1-GENERAL

- 1.1 Work includes the installation of reinforced concrete masonry units as indicated on the drawing and specified herein.
- 1.2 Related work specified elsewhere includes Division 1 Sections, Section 03010-Concrete and Section 04200-Unit Masonry.

#### 1.3 Submittals:

Shop Drawings: Submit shop drawings for fabrication, bending and placement of reinforcement bars. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures". Show bar schedules, diagrams of bent bars, stirrup spacing, lateral ties and other arrangements and assemblies as required for fabrication and placement of reinforcement for unit masonry work.

#### 1.4 Quality Assurance:

Comply with ACI 531 "Building Code Requirements for Concrete Masonry Structures", ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures", ANSI/NBS A 74 (A41.2) "Building Code Requirements for Reinforced Masonry" and BIA "Building Code Requirements for Engineered Brick Masonry".

### PART 2-MATERIALS

- 2.1 General: Refer to Section 04200-Masonry Units for masonry materials and accessories not included in this section.
- 2.2 Reinforcement: Provide deformed bars of grade indicated complying with ASTM A 615, except as otherwise indicated.

Grade 40 for bars #3  
Grade 60 for bars #4 or larger

Shop fabricate reinforcement which is shown to be bent or hooked.

## PART 3-EXECUTION

### 3.1 General:

Comply with applicable requirements of Section 04200-Unit Masonry.

Temporary Formwork: Provide formwork and shoring as required for temporary support of reinforced masonry.

### 3.2 Installation:

Lay CMU units in full-face mortar beds. Solidly bed cross-webs of starting courses in mortar. Maintain head and bed joint widths of 3/8" or match existing.

Lay CMU wall units in stack with vertical joints in each course centered on units in courses above and below.

Maintain vertical continuity of core or cell cavities which are to be reinforced and grouted. Keep cavities clear of mortar, solidly bed webs in mortar where adjacent to reinforced cores or cells.

Where horizontal reinforced bond beam are indicated, use special units or modify regular units to allow for placement of continuous horizontal reinforcement bars.

### 3.3 Placing Reinforcement:

Clean reinforcement of loose rust, mill scale, earth, ice or other materials which will reduce the bond to mortar or grout. Do not use kinked excessively rusted bars.

Position reinforcement accurately at spacing shown, secured against displacement, and spliced by lapping, unless otherwise indicated, at locations shown.

### 3.4 Grouting:

Use grouting technique and type of grout appropriate to masonry construction indicated and as recommended by the NCMA.

Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist displacement of masonry units and breaking of mortar bond.

Place grout by pumping into grout spaces. Limit grout pours to sections that can be completed in one working day with

not more than one (1) hour interruption of pouring operation. Place grouts in lifts not exceeding 5'. Rod or vibrate each grout lift during the pouring operation.

Where bond beam occurs more than one course below top of pour, fill bond beam course within 1" of vertically reinforced cavities, during the construction of masonry.

When more than one pour is required to complete a given section of masonry, extend reinforcement beyond masonry as required for splicing. Pour grout within 1-1/2" of top course of first pour. After grouted masonry is cured, lay masonry units and place reinforcement for second pour section before grouting. Repeat as required.

**END OF SECTION 04230 - REINFORCED UNIT MASONRY**

## **SECTION 08100-STEEL DOORS AND FRAMES**

### PART 1-GENERAL

- 1.1 Work includes all material, labor and accessories needed to install hollow metal doors, steel door frames as indicated on the drawings and specified within this section.

Required fire ratings of steel doors and frames are indicated on the door and window schedules. Doors and frames required to be fire rated shall be supplied with approved U.L. Rating label attached.

- 1.2 Related Work Specified Elsewhere: Section 08710-Finish Hardware, Section-08800 Glass and Glazing and Section 09900-Painting.

- 1.3 Quality Control: Provide doors and frames which comply with Steel Door Institute "Recommended Specifications for Standard Steel Doors and Frames" (SDI-100) and as specified herein.

- 1.4 Submittals

Product Data: Submit manufacturer's technical data indicating this product complies with the requirements.

Shop Drawings: Submit shop drawings showing manufacturer's standard detail and specifications for steel doors and frames showing their application to the project as required.

### PART 2-MATERIALS

- 2.1 Acceptable Manufacturers

Subject to compliance with the requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

Amweld Bldg. Products Division, Ceco Corporation, Curries Manufacturing, Inc., Dittco Products Division, Fenestra Mesker Ind., Inc., Republic Builders Products, Corp., and Steelcraft Manufacturing, Co.

## 2.2 Materials

Hot-Rolled Steel Sheets and Strips: Commercial quality carbon steel, pickled and oiled per ASTM A 569 and A 568,

Cold-Rolled Steel Sheets: Commercial quality carbon steel complying with ASTM A 366 and A 568.

Galvanized Steel Sheets: Commercial quality, zinc-coated carbon steel sheets complying with ASTM A 526, G 60 zinc coating, mill phosphatized.

Supports and Anchors: Minimum 18-gauge galvanized sheet steel.

Inserts, Bolts and Accessories: Manufacturer's standard units. Use hot-dipped, galvanized items for units built into exterior walls, complying with ASTM A 153.

## 2.3 Fabrication

Fabricate units to be rigid, neat in appearance and free from defects, warps or buckle. Weld exposed joints continuously, grind, dress and make smooth, flush and invisible.

Interior Doors: SDI-100, Grade II, heavy-duty, Model 1, minimum 18 gauge face.

Fabricate exposed faces from cold-rolled steel.

Fabricate concealed stiffeners, edge channels, etc.. from either cold-rolled or hot-rolled steel.

Exterior Doors: SDI-100, Grade III, extra heavy-duty, Model 2 minimum 16 gauge face.

Fabricate doors from phosphatized sheet steel with one coat baked on primer. Close top and bottom edges of exterior doors as integral part of door construction.

Frames: Comply with SDI-100, of the types and style indicated, for materials quality, metal gages, and construction details.

Provide standard hollow metal frames of doors with concealed fastenings, unless indicated otherwise. Fabricate frames of minimum 16 gauge cold rolled steel.

Frames to be of hot-dipped galvanized steel with one coat baked on enamel.

Fabricated frames to be mitered and welded for exterior and interior application.

Prepare frames to receive three (3) silencers on strike jambs of single-swing frames.

Finish Hardware Preparation: Prepare steel doors and frames to receive concealed finish hardware, including cutouts, reinforcing, drilling and tapping, complying with ANSI A 115 "Specifications for Door and Frame Preparation for Hardware".

Reinforce units to receive field installed, surfaced mounted finish hardware, where specified.

Locate finish hardware as indicated or, if not indicated per DHI "Recommended Locations for Builder's Hardware."

- 2.4 Finish: Shop paint exposed surfaces of doors and frames, including galvanized surfaces, using manufacturer's standard baked-on rust inhibitive primer which is suitable as a base for the specified finish paints.

### PART 3-EXECUTION

#### 3.1 Installation

Install steel frames and hollow metal doors in accordance with manufacturer's instructions and final shop drawings. Grout door frames solid.

Fit doors accurately into frames with clearances specified in SDI-100.

#### 3.2 Adjusting and Final Cleaning

Check and adjust operating finish hardware and leave door in complete and proper operating condition.

Immediately prior to final inspection remove protective covering from prefinished door. Touch up any markings or damage as required.

**END OF SECTION 08100-STEEL DOORS AND FRAMES**

## SECTION 08330-OVERHEAD COILING DOORS

### PART 1-GENERAL

- 1.1 Work includes all material, labor and accessories needed to install complete operating overhead coiling doors assembly.
- 1.2 Related Sections Specified Elsewhere: None
- 1.3 Submittals

Product Data: Submit manufacturer's technical data, roughing-in diagrams, and installation instructions for each type and size of overhead coiling door. Provide operating instructions and maintenance information indicating this product complies with the requirements.

Shop Drawings: Submit shop drawings showing manufacturer's standard detail and specifications for steel doors and frames showing their application to the project as required.

#### 1.4 Quality Control:

Manufacturer: Rolling doors shall be manufactured by a firm with a minimum of five years experience in the fabrication and installation of rolling doors. Manufacturers proposed for use which are not named in these specifications, shall submit evidence of ability to meet performance and fabrication requirements specified and include a list of five projects of similar design and complexity completed within the past five years.

Single Source Responsibility: Provide overhead coiling door as a complete unit produced by one manufacturer, including hardware, accessories, mounting and installation components.

Installer: Installation of rolling door shall be performed by an authorized representative of the door manufacturer.

- 1.5 Delivery, Storage and Handling: Deliver materials and products in labeled protective packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage from weather, excessive temperatures and construction operations.

## PART 2-MATERIALS

### 2.1 Acceptable Manufacturers

Provide the following product or an approved equal:

Manufacture: "Wayne Polton"

Door: Series 24, 16 ga. roll-up Steel door.

### 2.2 Materials

Door Curtain: Steel door w/2 coats baked on enamel finish.

Color: Finish to be selected by Architect from manufacturer's standard colors.

Lock: Provide Keyed lock.

## PART 3-EXECUTION

### 3.1 Preparation

Take field dimensions and examine condition of substrates, supports and other conditions under which this work is to be performed. Do not proceed with work until unsatisfactory conditions are corrected.

### 3.2 Installation

Install door and operating equipment complete with necessary hardware, jamb and head mold strips, anchors, inserts, hangers and equipment supports in accordance with final shop drawings and manufacture's instructions.

Upon completion of installation including work by other trades, lubricate, test and adjust doors to operate easily free from warp, twist of distortion and fitting weathertight for entire perimeter.

### 3.3 Adjusting and Cleaning

Test rolling doors for proper operation and adjust as necessary to provide proper operation with binding or distortion.

Touch up damaged coatings and finishes and repair minor damage. Clean exposed surfaces using non-abrasive materials and methods recommended by manufacturer of material or product being cleaned.

**END OF SECTION 08330-OVERHEAD COILING DOORS**

## **SECTION 08710-FINISH HARDWARE**

### PART 1-GENERAL

- 1.1 Work includes all material, labor and accessories needed to install Finish Hardware as indicated on the drawings and specified within this section.
- 1.2 Related Work Specified Elsewhere: Division 1 Specifications, Section-08100 Steel Doors.

Federal Specification numbers, if shown, are from FS FF-S, 106, 111, 116 and 121.

#### 1.3 Submittals

Submit 5 copies of final hardware schedule organized by groups, to indicate specifically the product to be furnished for each item required on each door. Furnish cover sheet listing the name of the Owner, Architect, Contractor, hardware consultant and date of submittal.

Furnish a vertical listing of the hardware items used followed by manufacturer's name either on cover sheet or immediately following the cover sheet (e.g. "hinges-manufacturer's name).

Schedule hardware items for each door separately in typed vertical form. List each door in door schedule. Do not group doors with like or similar hardware under a single heading.

Describe each piece of hardware with specified manufacturer's numbers or their equivalents as approved for each item.

Furnish templates to each fabricator of doors and frames as required for preparation to receive the hardware.

Submit samples of the hardware items, showing each required finish from each manufacturer (for acceptance of color and texture only).

### PART 2-MATERIAL

#### 2.1 Finish and Base Material Designations

Typical hardware finish to be 626, (US 26D) "Satin Chromium Plated", Unless Noted Otherwise (U.N.O.).

Where base material and quality of the finish are not otherwise indicated, provide at least the commercially recognized quality specified on applicable Federal Specifications.

## 2.2 Hinges and Pivots

Manufacturers: Hager, Lawrence, McKinney, Stanley, or equal.

Steel Hinges: Provide full-mortise type hinges on each door, except as otherwise indicated and except as otherwise needed for proper support and operation of doors. Provide stainless steel pins, non-removable pins for exterior and public interior exposure and flat button with matching plugs.

## 2.3 Locks, Latches and Bolts

Manufacturers: Best.

Provide cylindrical chassis lock or latch sets at all locations, unless noted otherwise.

Equip lock sets with 6-pin tumbler type lock cylinders and two nickel silver keys per lock, in a masterkey system to be designated by Owner.

Provide Construction Locks with either temporary cylinders for the construction period or temporary construction keying which is automatically voided through the use of the Owner's key.

## 2.4 Door Control Devices

Manufacturers: Norton, or equal.

Finish exposed metal to match hardware.

Size and mount units indicated or, if not indicated, to comply with the manufacturer's recommendation for the exposure condition. Reinforce the substrate as required.

Where parallel arm closure are indicated provide units one size larger than recommended for standard units.

## 2.5 Miscellaneous Door Hardware

Manufacturers: Builder Brass Works, Trinco, or equal.

Provide kickplates which 1-1/16" to 1/2" less actual width of door with height as specified in the hardware schedule. Install with self tapping screws. Use 2.02 lbs. stainless for kickplates.

Provide gray rubber exposed resilient parts.

### PART 3-EXECUTION

#### 3.1 Installation

Hardware Mounting Heights: Per Door and Hardware Institute's "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames", except as otherwise indicated.

Install each hardware item to comply with manufacturer's instructions and recommendations.

Hardware Adjustments: Return to project one month after Owner's occupancy and adjust hardware for proper operation and function. Instruct Owner's personnel in proper maintenance and adjustment.

#### 3.2 Finish Hardware Schedule

Product Designation: Products designated are to establish a level of quality and/or operation desired. Furnish the designated product or one which is the equivalent (as judged by Architect) to the indicated product.

Provide the following for 2 new doors in existing frames and 1 new door and frame:

- 3 ea Hinges Stanley FBB199
- Push/Pull hardware Stainless Steel
- Door Closure LCN 4010
- Deadbolt - Best - Double Keyed
- Kickplate 37" x 10" Stainless Steel
- Threshold - Pemko Saddle Threshold 1/4" high

**END OF SECTION 08710-FINISH HARDWARE**

## **SECTION 09300-TILE**

### PART 1-GENERAL

- 1.1 Work to include all materials, labor and accessories required to complete tile installation as shown on plans and specified herein.
- 1.2 Related Work Specified Elsewhere: Division 1 Sections and Section 03010-Concrete.
- 1.3 Submittals

One copy of manufactures written product specification for tile, waterproof membrane, grout and mortar.

For verification purposes, submit 3 tiles of each size, color and type to be installed.

- 1.4 Product Delivery, Storage and Handling: Deliver all products to the site in manufacturer's unopened containers. Keep products dry and in a clean location.

### PART 2-PRODUCTS

- 2.1 Acceptable Manufacturer's: Match existing

Homual 4 x 8 red pavers with 4" coved base.

- 2.2 General

Colors, Texture and Patterns: See drawings for tile locations. Colors to match existing. Layout to match existing.

For tile, grout and other products requiring selection of colors, surface textures or other appearance characteristics, provide products to match characteristics indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standards.

- 2.3 Trim Units

Size: As indicated, coordinated with sizes and coursing of adjoining flat tile, where applicable.

External & internal corners to be radiased or coved. Top of base to be bullnosed.

2.4 Underlayment: New concrete slab or base on existing floor.

2.5 Setting Materials:

Mixing Mortars and Grout: Mix mortars and grout to comply with requirements of referenced standards and manufacturer's for accurately proportioning of materials, water or additive content, mixing equipment and mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

Mortar: "Laticrete" 253 Multipurpose Thin-Set Mortar, or approved equal.

Grout: "Laticrete" 1500 Polymer Fortified Sanded Grout and Joint Filler, or approved equal.

2.7 Elastomeric Sealant:

General: Provide Manufacturer's Standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class and uses.

Compatibility: Provide sealant, joint fillers and other related materials that are compatible with on another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.

Colors: Color of exposed sealant to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

One-Part Mildew Resistant Silicone Sealant: Type S, Grade NS, Class 25, Uses NT, G, A, and as applicable to nonporous joint substrates indicated, o; formulated with fungicide for sealing interior joints in and around ceramic tile, showers sinks and plumbing fixtures. Coordinate with manufacturer to coordinate selection of silicone sealant compliant with requirements.

### PART 3-INSTALLATION

3.1 Preparation & Installation of Floor Tile

Inspect surface for proper tolerances, dryness and cleanliness. Report any discrepancies to the Contractor.

Adhere flooring to concrete per manufacturer's direction, following all tolerance requirements at seam and for perimeter expansion void.

Extend tile work into recesses and under or behind equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disrupting pattern or joint alignments.

Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures and other penetrations so that plates, collars, or covers overlap tile.

### 3.2 Final Cleaning

Clean up all unused materials and debris and remove from site.

Leave finished installation clean and free of cracked, chipped, broken, unbonded or otherwise defective tile work.

### 3.3 Protection

When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile floors.

Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent staining, damage and wear.

Prohibit foot and wheel traffic from using tiled floors for at least 7 days after grouting is completed.

Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

**END OF SECTION 09300-TILE**

## SECTION 09900-PAINTING

### PART 1-GENERAL

- 1.1 Work to include all materials, labor and accessories required to complete painting and finishing of doors & frames and clear sealer over interior of existing brick.
- 1.2 Related Work Specified Elsewhere: Section 08100-Steel Doors and Frames.
- 1.3 Work Not Included

All wood elements inside and out to be repainted by ITD.

Unless otherwise indicated, shop priming of ferrous metal items and fabricated components are included under their respective trades.

Pre-finish items, such as metal toilet partitions, acoustic material and the like, are not included. Unless otherwise indicated, painting not required on surfaces of concealed areas except for piping, equipment and other such items within the concealed spaces.

Finished metals such as anodized aluminum, stainless steel, bronze, and similar metals will not be painted.

Do not paint any moving parts of operating units, or over any equipment identification, performance rating, name of nomenclature plates or code-required labels.

- 1.4 Submittals

Color Charts: Submit to Architect, manufacturer's standard color charts for all applications listed.

- 1.5 Delivery and Storage

Deliver materials to job site in new, original, and unopened containers bearing manufacturer's name, trade name, and label analysis.

Store where indicated in accordance with manufacturer's instructions.

### PART 2-MATERIALS

## 2.1 General

Mix, prepare, and store painting and finishing materials in accordance with manufacturer's directions.

The use of lead-base paint on any interior or exterior surface is prohibited.

- 2.2 Acceptable Manufacturers: Subject to compliance with the requirements specified, provide paint from manufacture's below or an approved equal.

## 2.3 Steel Doors & Frames, Brick Sealer

Primer: See Section 08100-Steel Doors

Finish Coat: (2) coats, "Columbia", polyurethane, 400 Series. Color to be selected by Architect.

Sealer: (1) coat, 2-component epoxy sealer, clear.

## PART 3 EXECUTION:

### 3.1 Coordination

Provide finish coats which are compatible with prime paints used.

Provide barrier coats over incompatible primers where required.

Notify Architect in writing of anticipated problems using specified coatings with substrates primed by others.

### 3.2 Surface Preparation:

Existing interior brick to be wet sand blasted to remove gloss finish. Do trial areas to ensure pressure and/or sand grit does not pit face of brick. Apply clear epoxy finish to new brick and existing brick on interior surfaces.

Perform preparation and cleaning procedures in strict accordance with coating manufacturer's instructions for each substrate condition.

Remove hardware and accessories, machined surfaces, plates, lighting fixtures and similar items in place and not to be finish-painted or provide surface-applied protection.

Reinstall removed items and remove protective coverings at completion of work.

### 3.3 Application

Apply painting and finishing materials in accordance with manufacturer's directions.

Use applicators, and techniques best suited for materials and surfaces to which applied.

Do not roll paint on doors.

Finish exterior doors on tops, bottoms and edges same as exterior faces, unless otherwise indicated.

Sand lightly between succeeding enamel or varnish coats.

Omit first coat (primer) on metal surfaces which have been shop-primed an touch-up painted, unless otherwise specified.

Apply prime coat to material which is required to be painted or finished, and which has not been prime coated by others.

Apply each material at not less than the manufacturer's recommended spreading rate, to provide a total dry film to thickness of not less than 4.0 mils for entire coating system of prime and finish coats for 3-coat work.

Provide a total dry film thickness of not less than 2.5 mils for entire coating system of prime and finish coat for two-coat work.

Back roll, by hand the final finish coat.

Paint exposed surfaces, except as otherwise indicated, whether or not colors are designated.

If not designated, colors will be selected by Architect from standard colors available for the coatings required.

### 3.4 Job Conditions

Apply water-based paints only when temperature of surfaces to be painted and surrounding air temperatures are between fifty degrees Fahrenheit (ten degrees Celsius) and ninety degrees Fahrenheit (thirty two degrees Celsius), unless otherwise permitted by paint manufacturer's printed instructions.

Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between forty five degrees Fahrenheit (seven degrees Celsius) and ninety five degrees Fahrenheit (thirty five degrees Celsius), unless otherwise permitted by paint manufacturer's printed instructions.

Do not paint in snow, rain, fog, or mist or when relative humidity exceeds eighty five percent (85%), or on to damp or wet surfaces, unless otherwise permitted by paint manufacturer's printed instructions.

Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

**END OF SECTION 09900-PAINTING**

## **SECTION 10155-TOILET PARTITIONS**

### PART 1 GENERAL:

- 1.1 Work includes all material, labor, and accessories needed to install toilet partitions as indicated on the drawings or specified herein.

Work includes installation of partitions as shown on plans and wall panels behind fixtures in men's restroom. See elevations for wall panels.

- 1.2 Submittals: Submit shop drawings for compartments showing details and proper attachment for finished work and manufacturer's standard color chart.

### PART 2 MATERIALS:

- 2.1 General: Toilet Partitions shall be floor mounted and overhead braced, urinal screens shall be floor and wall mounted. Pilaster shoes to be solid plastic. Partitions to be solid plastic(HDPE).

Finish: Color to be selected by the Architect from manufacturer's standard color selection.

- 2.2 Acceptable Manufacturers: Subject to compliance with the requirements specified, provide toilet partitions from one of the following or an approved equal:

Bradley Santana or Equal.

- 2.3 Hardware and Fittings: Provide manufacturer's recommended, standard products. All pilasters to have solid plastic shoes.

Headrail: Shall be a 1" x 1-1/2" tube of extruded alloy, polished and anodized, or as recommended by manufacture for heavy duty vandal resistant.

### PART 3 EXECUTION:

- 3.1 General: Install toilet partitions per manufacturer's recommendation and standard details.

All partitions shall be installed in a substantial manner, straight, level and plumb. No evidence of drilling, cutting or patching shall be visible in the finished work.

Provide manufacturer's recommended clearances at all joints.

Clean partitions and ensure proper working order of all hardware.

**END OF SECTION 10155-TOILET PARTITIONS**

## **SECTION 10440-SPECIALTY SIGNS**

### **PART 1-GENERAL**

- 1.1 Work includes all material, labor and accessories needed to install specialty signs as indicated on the drawings or specified within this section.
- 1.2 References: Specialty signs shall conform to the current edition of the A.D.A.(American's with Disabilities Act).
- 1.3 Samples: Submit a sample of each sign and material prior to fabrication.

### **PART 2-MATERIALS**

#### **2.1 Restroom Signs**

Women's Restroom: Provide (1) universal woman pictogram for each space with raised grade 2 Braille letters and (1) universal handicap accessible pictogram.

Provide (1) no smoking sign with pictogram and Braille letters.

Men's Restroom: Provide (1) universal man pictogram for each space with raised grade 2 Braille letters and (1) universal handicap accessible pictogram.

Provide (1) no smoking sign with pictogram and Braille letters.

Family Assist Restroom: Provide (1) universal sign with pictogram and raised grade 2 Braille letters and (1) universal handicap accessible pictogram.

Provide (1) no smoking sign with pictogram and Braille letters.

Panel Face: High pressure plastic laminate engraving stock with core and facing plies in contrasting colors from manufacturer's standard stock and colors.

Frame:	None
Edge Condition:	Beveled
Edge Color:	Same as Copy
Corner Condition:	1/2" Radius (rounded)

Fabrication: Fabricate panel signs to comply with requirements indicated. Minimum border dimension of the pictograms shall be 6".

### PART 3-EXECUTION

#### 3.1 Installation

Install restroom sign units level and plumb. Center of sign to be at 60" AFF and 12" from edge of latch side of door frame. Attach securely to wall.

No smoking signs?

**END OF SECTION 10440-SPECIALTY SIGNS**

## SECTION 10800-TOILET ACCESSORIES

### PART 1-GENERAL

- 1.1 Work includes all material, labor and accessories needed to install toilet accessories as indicated on the drawings and specified within the section.
- 1.2 Related sections and standard references applicable to work as follows:

Current edition of the A.D.A. (American Disabilities Act)

Section 08800-Glass & Glazing

- 1.3 Submittals

Manufacturer's data and installation instructions & color chart. Color shall be selected by Architect from manufacturer's standard color where applicable.

Provide samples of units when requested by the Architect. Acceptable samples will be returned and may be used in the work.

### PART 2-PRODUCTS

- 2.1 Materials

Stainless Steel.

Fasteners: Screws, bolts and other devices of same material as accessory unit or galvanized steel if concealed.

Fabrication: Stamped names or labels on exposed faces of toilet accessory units are not permitted.

Surface Mounted Accessories:

Grab Bars: Stainless steel, minimum 18 gauge wall thickness, 1-1/4" to 1-1/2" outside diameter with manufacturer's standard non-slip texture (see plans and interior elevation for lengths), concealed mounting. Finish to be stainless steel with satin finish.

Provide 5 ea stainless Steel mirrors. See plans for size. Mirrors to be seamless edge.

Provide 2 ea soap dispensers, Bobrick B-2111.

Diaper changing station Bobrick B-2230 provide (3) in restrooms.

1. All other accessories to be removed, protected & reinstalled to new partitions.

## 2.1 Acceptable Manufacturers

A & J United Machine & Metal Products Corp., Accessory Specialties, Inc., American Dispenser Co., Bobrick Washroom, Equip., Inc., Bradley Corp., G.M. Ketcham Co., McKinney/Kidde, Inc., The Charles Parker Co., Watrus, Inc. or approved equal.

## PART 3-EXECUTION

### 3.1 Installation

Install toilet accessories using fasteners appropriate to substrate and recommended by the manufacturer of the unit.

See drawings for toilet accessories location and mounting heights.

Install units plumb and level, firmly anchored in location indicated.

Provide toilet accessories as indicated or scheduled.

### 3.2 Final Cleaning

Clean and polish all exposed surfaces after removing protective coatings.

**END OF SECTION 10800-TOILET ACCESSORIES**

## SECTION 15100 - MECHANICAL GENERAL PROVISIONS

### PART 1 - GENERAL

#### 1.1 SCOPE:

##### A. General:

1. The Bidding Requirements, Contract Requirements, and the General Requirements (Division 1) of these specifications shall govern all parts of the work.

##### B. Work Included:

1. Install work in accordance with these specifications and the accompanying plans. Furnish all labor, material, and equipment together with all incidental items not specifically shown or specified which are required by good practice to provide the complete mechanical systems as described.

##### C. Coordination and Site Visits:

1. This section of the work requires examination of and reference to all architectural, structural, utility, and electrical drawings for construction conditions that may affect the work. Inspect the building site and existing facilities for verification of existing conditions. Base all measurements from established benchmarks. Any discrepancy between actual measurements and those indicated, which prevents following good practices or the intent of the drawings and specifications, shall be reported to the Architect/Engineer, and work halted until instructions are received from the Architect/Engineer.

#### 1.2 CODES, PERMITS, FEES:

- A. Install all work in accordance with applicable codes and standards. Obtain all required permits, pay all required fees including utility connections or extensions, in connection with this portion of the construction. Obtain all required certificates of inspection for the work.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS AND WORKMANSHIP:

##### A. Materials:

1. All materials and equipment shall be of first quality, new, full size and weight, standard in every respect, and suitable for the space required. Use the same manufacturer for products of similar class or service, such as valves, pumps, controls, and air handlers. Protect all materials against loss, theft, or damage before and after installation.
2. Furnish equipment that will operate under all conditions of load without any sound or vibration that is objectionable in the opinion of the Architect/Engineer. Vibration or noise considered objectionable will be corrected by the Subcontractor at his expense.
3. Furnish and install all necessary foundations, supports, pads, bases, and piers required for all materials and equipment furnished under this contract.

4. Provide all required firestopping at piping and duct penetrations of fire rated walls, floors, ceilings, and roofs. Firestopping shall be Dow Corning Fire Stop Sealant 2000 or Fire Stop Foam 2001, or approved equal.

B. Workmanship:

1. All materials and equipment shall be installed in a neat and workmanlike manner by competent specialists for each subtrade. Work shall be installed to the satisfaction of the Architect/Engineer with unsatisfactory work removed and reinstalled to his satisfaction at no extra cost to the Owner.
2. Provide all cutting and patching necessary to install the work specified in this section. Patching shall match adjacent surfaces. No structural members shall be cut without the approval of the Architect/Engineer. Provide all sleeves and inserts required before the floors and walls are built.
3. Locate all equipment that must be serviced in fully accessible positions. Provide clearance for removal of replacement parts and components, and with necessary couplings or flanges to remove the component for maintenance.

2.2 SUBMITTALS AND SUBSTITUTIONS:

A. Prebid Approval:

1. Manufacturer's trade names and catalog numbers stated herein are intended to indicate the quality of equipment or materials desired. All manufacturers not specifically listed require prior approval. Submit catalog data, including specifications, of the proposed equipment to the Architect/Engineer for his approval at least 10 calendar days prior to bid opening. Notice of such approvals will be published in an addendum.

B. Submittals:

1. Within thirty days after award of this contract, provide six copies of a complete list of all materials and equipment proposed for this project. List shall contain make, type, manufacturer's name, and trade designation of all materials and equipment. Submittal shall also include manufacturer's complete specification for each item, including capacities, ratings, etc., and dimensions as required to check space requirements. Provide six copies of all submittals. The scheduled equipment is the basis of design for capacity, weights, physical size, etc. Alternate manufacturers shall not exceed the weight or physical size. Any changes to the Architectural, Structural, Mechanical, Electrical, and Control systems due to alternate manufactures shall be the responsibility of the Contractor and Supplier.
2. Approval of submittals shall not relieve the contractor from responsibility for deviations from the plans or specifications, unless he has, in writing, called the Architect's /Engineer's attention to deviations at the time of submission, and obtained his written approval. Approval of submittals does not relieve the contractor from responsibility for errors in shop drawings or literature.

C. Submittal Form:

1. The manufacturer's representative shall be responsible for the completion of the submittal form provided in these specifications. One form must be completed for each piece of equipment submitted. Equipment not provided with this form will not be reviewed and will be returned for re-submittals.
2. An electronic copy of this submittal form file is available from the engineer at the request of the manufacturer's representative, or a copy is also available at the end of this specification section.

D. Equipment Requiring Submittals:

1. Energy Recovery Ventilator
2. Air Diffusion Products
3. Plumbing Fixtures

PART 3 - EXECUTION

3.1 ACCESSIBILITY & SAFETY:

A. Accessibility:

1. All equipment which must be serviced or operated shall be located in fully accessible position. Minor changes from the drawings may be made to allow for better accessibility. All changes shall be approved prior to actual installation.
2. Access panels shall be provided if required for accessibility. Subcontractor shall furnish the required panels to the General Contractor and the required location for all access panels. Panels shall be installed by the General Contractor.

B. Safety:

1. Subcontractor shall provide guards for all belt drives and rotating machinery. No water piping shall run immediately over or within a 3-foot plan view clearance of any electrical panel or motor starter. Where piping must be located within these zones, install piping inside a conduit to prevent water access to electrical equipment.

3.2 COORDINATION:

- A. Coordinate all work with the various trades involved to provide a complete and satisfactory installation. The exact details of piping, ductwork, and equipment are not shown. No additional compensation will be made for offsets or relocation required in coordination with other trades.
- B. Alterations required due to improper supervision by the subcontractor shall be made at no extra cost, to the satisfaction of the Architect/Engineer.

3.3 ELECTRICAL:

- A. Electric motors required for equipment specified in this section shall be provided and installed by this Subcontractor. Motor starters, disconnects, relays, pilot lights, etc., are in general, to be

furnished and installed by the Electrical Contractor. Starters, relays, controls, etc., which are factory assembled into packaged equipment shall be furnished by the Mechanical Contractor under this section of the specifications.

- B. All motors shall be provided with adequate starting and protective equipment as specified or required. Motor capacity shall be sufficient to operate driven device under all conditions of operation and load without overload. Minimum horsepower shall be as specified.

### 3.4 EXCAVATION & BACKFILL:

- A. Excavate trenches required for underground piping to proper elevation and grade. Provide trenches with solid bottoms to allow support of piping along entire length with excavation at bells as required for jointing and inspection. Provide repairing of finished surfaces, and all required shoring, bracing, pumping, and protection for safety of persons and property. Observe all Local or State Safety Codes. Verify that elevations of existing utilities will allow for proper grading of piping connecting to existing utilities.

### 3.5 IDENTIFICATION AND CODING:

#### A. Painting:

- 1. All painting of mechanical equipment, accessories, ductwork, and piping shall be furnished and applied under the Architectural section of these specifications. All painting shall be completed before any identification markings are applied.

#### B. Equipment:

- 1. Identify all equipment with a black formica label, with white reveal when engraved. Lettering to be 3/16 inch high minimum. In general, identify equipment as to area served in addition to title and code number of the equipment as taken from the plans.

#### C. Piping:

- 1. Identify all piping as to the service of the pipe and the direction of flow. The letters shall be 3/4 inch high on piping two inches or smaller, and 1-1/4 inches high on piping up to six inches. Flow arrows shall be at least six inches long. The letters and flow arrows shall be made by precut stencils and oil base paint, one inch high and black, or factory fabricated plastic pipe markers. Piping shall be identified at 25 foot maximum intervals, on long continuous lines; adjacent to each item of equipment; on each riser and junction, and on both sides of all wall penetrations. Underground piping shall be identified with bright colored continuously printed plastic tape of not less than 6" wide by 4 mil thick, manufactured for direct burial service. Install directly above all buried pipe, 6 to 8 inches below finished grade. All piping shall be labeled per the Uniform Plumbing Code, latest edition.

#### D. Valves:

- 1. Regardless of size, all valves shall be tagged with a numbered brass tag, 1-1/2 inches by 3 inches minimum in size and 0.051 inch thick. A valve chart indicating valve tag number, location, service, and normal position shall be mounted in a suitable framed and glassed cover in the main mechanical room or as directed. Valve chart shall be duplicated in the Maintenance and Operations Manual.

### 3.6 TESTING:

#### A. Piping:

1. All plumbing piping (drainage and water) shall be tested in accordance with the requirements of the Uniform Plumbing Code, latest edition. Other piping systems shall be tested hydrostatically, to 1.5 times the operating pressure, but not less than 100 psi, for a minimum period of two hours. If the test pressure falls more than 5 percent during the test period, the leak shall be located, repaired, and the test repeated.
2. Piping shall be tested before insulation has been installed. Delicate control mechanisms shall be removed during tests to prevent shock damage. The use of chemicals or compounds to stop leaks shall not be permitted.
3. A test report shall be submitted for each piping system test. Test report forms are part of Specifications Section 15200, or are available from the Engineer.

#### B. Systems:

1. All systems, including heating, ventilating, air conditioning, and plumbing systems, shall be tested at the completion of the building to establish that the systems operate as specified and required. Testing shall be performed after air and water balancing is completed.
2. All controls shall be calibrated accurately and all equipment shall be adjusted for satisfactory operation. Excessive vibration or noise from any system shall be corrected.
3. The air conditioning system shall be tested for satisfactory operation when the outside air temperature reaches 60 degrees F. or warmer. All other systems shall be tested at building completion. All tests shall be performed in the presence of the Architect/Engineer or his representative.

### 3.7 BALANCING:

#### A. Scope:

1. Prior to final acceptance by the Owners, all air systems shall be balanced to deliver the quantities as specified or directed. The air balance shall be performed by an independent agency specializing in testing, adjusting, and balancing, and is certified by the Testing, Adjusting, and Balancing Bureau (TABB), and the National Environmental Balancing Bureau (NEBB). Total system balance shall be in accordance with TABB.
2. Approved balance contractors are Felts-House Engineering and Ro-Bar Technical Services. All other contractors must receive prior approval from the Engineer, in writing, before bidding the project.
3. The Mechanical Contractor shall provide assistance to the Balancing Contractor by identifying all installed mechanical systems and assisting access to all installed mechanical systems. All mechanical systems shall be completely operational and functional prior to the Balancing Contractor performing his specified work.

B. Air Balancing:

1. Balancing of the air system shall consist of:

- a. Adjust all air volumes, including outside air, to the quantities shown, with allowable variation of plus 10, minus 10 percent.
- b. Record all system, outside air, zone, diffuser, grille, and register C.F.M. Use volume control devices to regulate air quantities only to the extent that adjustments do not create objectionable air motion or sound levels.
- c. Test and record all system static pressures, inlet and discharge, on all packaged units, fans, and terminal units. Vary total system air quantities by adjustment of fan speeds. Provide drive changes as necessary. Vary branch air quantities by damper regulation.
- d. Test and record motor full load amps and nameplate amps.
- e. Test and record entering and leaving temperatures at all coils.
- f. Adjust all automatically operated dampers, in cooperation with the Control Contractor, to the required settings. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions within specified tolerances. Where modulating dampers or economizers are provided, take measurements at full return air, minimum outside air, and 100 percent outside air mode of operation.
- g. Adjust diffusers and grilles for proper deflection, throw, and coverage. Eliminate drafts and excessive noise where possible.
- h. Mark final positions of all balance dampers with a red felt pen.
- i. Air systems shall be balanced in accordance with standard procedures and recognized practices of the Associated Air Balance Council, and the Testing, adjusting, and Balancing Bureau.

C. Quality Assurance:

1. The Balancing Contractor shall demonstrate to the Engineer of record, flow verification for at least 10% of the balanced devices as selected by the Engineer. If more than 25% of the tested devices do not meet the designed or balance report, then the entire system balance must be rebalanced.

D. Balance Reports:

1. Submit four copies of the air system balance report to the Architect/Engineer for evaluation and approval. Reports shall be on TABB/SMACNA forms that indicate information addressing each of the testing methods, readings, and adjustments.

3.8 CLEANING AND ADJUSTING:

- A. Thoroughly clean all parts of the system at the completion of the work. Flush all water circulating systems with fresh water and then drain. Clean all strainers and refill system. Install new, clean

air filters in all systems. Adjust all devices for proper operation and lubricate all equipment as required. Repaint any painted surface that has been damaged.

B. All potable water systems shall be flushed and disinfected after tests are completed. Disinfection shall be in accordance with local municipal and State Plumbing Inspector's criteria. In lieu of such criteria, the following procedure shall be followed for disinfection:

1. Completely flush system. Add alkali or acid (hydrochloric) to bring water ph level to between 7.4 and 7.6.
2. Inject chlorine (liquid, powder, tablet, or gas) throughout the system to obtain 50 to 80 mg/L residual.
3. Bleed water from outlets to ensure distribution, and test for residual at a minimum of 15 percent of the outlets.
4. Maintain disinfection in system for 24 hours.
5. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
6. Flush disinfectant from system until residual is equal to that of incoming water, or 1.0 mg/L.
7. Take samples no sooner than 24 hours after flushing, from 10 percent of the outlets and the incoming water.

### 3.9 PROJECT CLOSEOUT:

A. Operations & Maintenance Manual:

The Contractor shall provide an operations and maintenance manual at least thirty days prior to completion of work. The manual shall be of the three ring binder type, entitled "Operations and Maintenance Manual", with the job name and year of completion also included. The manual shall include, as a minimum:

1. Maintenance instructions for all equipment, including lubrication requirements.
2. Equipment suppliers names, addresses, and telephone numbers.
3. Equipment catalog cuts, ratings tables, model numbers, serial numbers, and accessories.
4. Parts numbers for all replaceable parts.
5. Air and/or water systems balance report as hereinbefore specified.
6. Control diagram or drawing and operation sequence.
7. Valve tagging chart as hereinbefore specified.
8. Filter chart listing unit callout, size of filters, and quantity of filters.

9. Guarantee letter as specified below.

10. Any additional information required to enable the Owner to properly maintain the building mechanical system.

11. After approval of the Operations and Maintenance Manual by the Architect/Engineer, the Contractor shall furnish two copies of the manual to the Owner.

B. Mechanical System Training Period:

1. After the mechanical system is completely installed and operational, the mechanical contractor shall provide a minimum of two hours training and instruction time for the building Owner or his representative. During this period, the contractor shall instruct the Owner in the operation and maintenance of all parts of the mechanical system, using the O & M manual where applicable. The contractor shall provide a copy of the Project Owner Mechanical Systems Training Form (attached to this specification), with proper signatures, to the Engineer prior to substantial completion and insure that a copy is inserted into the project O & M manuals.

C. As-Built-Drawings:

1. Provide two sets of blue-line mechanical drawings showing the work as it was actually installed. The drawings shall indicate all departures from the contract drawings, and shall locate all underground utility lines with dimensions from established building lines. Make all notations neat and legible, with red indelible pencil. At the completion of the work, these as-built drawings shall be signed and dated by the Mechanical Contractor, and returned to the Architect/Engineer.

D. Guarantee:

1. All work furnished under this section shall be guaranteed in writing to be free from defective work or materials for a period of one year after acceptance of the contract. All repairs or replacements because of defective materials or workmanship or noncompliance with code shall be provided without additional cost to the Owner. Contractor shall furnish a letter indicating above guarantee with space for date of acceptance and expiration of guarantee. Letter shall be included in O & M Manual.

END OF SECTION 15100

## SECTION 15150 - MECHANICAL START-UP

### PART 1 - GENERAL

#### 1.1 SCOPE:

##### A. General:

1. The purpose of the mechanical start-up is to provide the owner of the facility with a high level of assurance that the mechanical system has been installed and operates per the requirements of the mechanical construction plans and specifications. The Mechanical General Provisions, Section 15100, is to be included as a part of this section of the specifications.

##### B. Pre-start and Start-up checklist:

1. The contractor shall be responsible for the completion of pre-start and start-up checklist forms. These forms can usually be obtained from the equipment manufacturer. If the forms can not be obtained from the manufacturer, forms may be obtained from the Engineer.
2. After completion of pre-start and start-up checklists, the contractor shall provide a copy of the pre-start and start-up checklist to the engineer for review and approval prior to substantial completion.

### PART 2 – START-UP PROCESS

#### 2.1 RESPONSIBILITIES

##### A. Mechanical Contractor:

1. Coordinate with other trades involved in the installation of mechanical equipment to complete the requirements of mechanical start-up specifications.
2. Complete the pre-start and start-up checklist forms obtained from the equipment manufacturer or the Engineer.
3. Notify the mechanical engineer of tests to be witnessed. Contractor shall give the engineer a minimum of 48 hours notice prior to test.

##### B. Engineer:

1. Review the completed pre-start and start-up check lists provided by the mechanical contractor.
2. At final inspection, spot check items on the pre-start and start-up checklist forms to insure that they have been completed.

#### 2.2 EQUIPMENT PRE-START

A. Before starting any equipment or system, complete the system pre-start checklist forms. As part of the pre-start process, the following items shall be completed as applicable:

1. Piping systems shall be pressure tested as specified, found to be tight, with reports submitted.
2. Piping systems shall be flushed and cleaned as specified, all required reports submitted, and the system shall be filled or charged per plans.
3. Air system cleaning is complete and final filters shall be installed.
4. Vibration isolation and seismic restraints shall be installed per plans and specifications.
5. Equipment drives shall be aligned.
6. Electrical services shall be installed and checked.
7. Control points checkouts shall be completed.
8. Safety controls shall be installed and operation checked.
9. Manufacturer's representatives have carried out major equipment start-up, and all checks shall be documented on the relevant checklists as they are carried out.
10. Equipment has been thoroughly cleaned (interior and exterior of units), of construction debris.
11. Deficiencies or incomplete work shall be corrected and pre-start shall be repeated until the installation is ready for operation.

### 2.3 EQUIPMENT START-UP

A. After the pre-start up process described in Section 2.2, complete the system start-up checklist and document findings with forms provided. As part of the Start-up process, the following items shall be completed as applicable:

1. Air systems balanced as specified in plans and specifications.
2. Problems revealed during balancing of air systems shall be corrected.
3. Ensure final adjustments to vibration isolation and seismic restraints are carried out per the manufacturer's requirements.

B. Deficiencies or incomplete work shall be corrected, and the startup shall be repeated until correct installation and function has been confirmed and the installation is ready for engineer verification.

### 2.4 TRAINING AND INSTRUCTION

A. Once the substantial completion has been approved, the mechanical contractor shall provide the Owner and engineer with a training schedule for operation of the mechanical equipment and

systems and their controls as listed in the specifications and plans. Reference Section 15100 Mechanical General Provisions, "Project Closeout" of these specifications.

PART 3 – EXECUTION

- A. The following systems and equipment shall be completed under the mechanical start-up plan as described above and documented with equipment pre-start and start-up forms provided.
  - 1. Energy Recovery Ventilator
- B. Pre-start and start-up forms are to be provided to the engineer for final approval before substantial completion.
- C. Approved forms shall be included in the operations and maintenance manual.

END OF SECTION 15150

## SECTION 15200 - PLUMBING

### PART 1 - GENERAL

#### 1.1 SCOPE:

- A. This section covers the work necessary for the plumbing system, complete. The Mechanical General Provisions, Section 15100, are to be included as a part of this section of the specifications.

#### 1.2 CODES:

- A. The plumbing system shall be installed in accordance with the Uniform Plumbing Code, latest edition, International Fuel Gas Code, latest edition; and all local and State Codes.

#### 1.3 FIXTURES & EQUIPMENT:

##### A. General:

1. Plumbing fixtures and equipment shall be as listed on the drawings. In addition to those specifically listed, the following manufacturers are approved for bidding only, with final approval for installation based on submittal data furnished:

- a. Fixtures, faucets, valves, and trim: American Standard, Kohler, Eljer, Elkay, Guardian, Just, Halsey-Taylor, Oasis, Haws, Crane, Acorn, Acorn Aqua, Acorn Safety, Willoughby, Bradley, Zurn, Intersan, Mansfield, Toto, Symmons, Leonard, Powers, Chicago, EBC, Delta, Moen, Geberit, T&S, Dearborn Brass, Brasscraft, Bemis, Church, Comfort Seats, & Beneke, Stern Williams.

1. Tank type water closets- American Standard, Kohler, Eljer, Mansfield, Toto, & Zurn.

2. Flush valve type water closets- American Standard, Kohler, Eljer, Mansfield, Toto, Zurn, Acorn, Willoughby, & Briggs.

- b. Flush Valves: Sloan, Delany, and Zurn. Moen ( sensor-operated only ).

- c. Carriers and Drainage Products: Jay R. Smith, Josam (Blucher-Josam), Zurn, Wade, and MIFAB.

- d. Water Heaters: Rheem, A.O. Smith, PVI, State, Bradford-White, and American.

- e. Backflow Preventers: Watts and Conbraco.

- f. All other manufacturers require prior approval.

2. Plumbing Fixture Standards:

All plumbing fixtures shall meet or exceed the following standards:

- a. ANSI A112.6.1 - Supports for Off-the Floor Plumbing Fixtures for Public Use.
- b. ANSI A112.18.1 - Finished and Rough Brass Plumbing Fixture Fittings.

- c. ANSI A112.19.1 - Enameled Cast Iron Plumbing Fixtures.
- d. ANSI A112.19.2 - Vitreous China Plumbing Fixtures.
- e. ANSI A112.19.3 - Stainless Steel Plumbing Fixtures (Designed for Residential Use).
- f. ANSI A112.19.4 - Porcelain Enameled Formed Steel Plumbing Fixtures.
- g. ANSI A112.19.5 - Trim for Water-Closet Bowls, Tanks, and Urinals.
- h. ANSI Z124.1 - Gel-Coated Glass-Fiber Reinforced Polyester Resin Bathtub Units.
- i. ANSI Z124.2 - Gel-Coated Glass-Fiber Reinforced Polyester Resin Shower Receptor and Shower Stall Units.
- j. ANSI Z358.1 - Emergency Eye Wash and Shower Equipment.
- k. ARI 1010 - Drinking Fountains and Self-Contained Mechanically Refrigerated Drinking Water Coolers.
- l. AWSI/ASSE 1001 – Atmospheric Vacuum Breaker
- m. ANSI/ASSE 1012 - Backflow Preventers with Immediate Atmospheric Vent.
- n. ANSI/ASSE 1011 - Hose Connection Vacuum Breakers.
- o. ANSI/ASSE 1013 - Backflow Preventers, Reduced Pressure Principle.
- p. ANSI/ASSE 1015 – Backflow Preventers, Double Check Principle
- q. ANSI/ASSE 1019 - Wall Hydrants, Frost Proof Automatic Draining Anti-Backflow Types.
- r. AWSI/ASSE 1020 – Pressure Vacuum Breaker
- s. AWSI/ASSE – 1-52 – Hose Connection, Double Check
- t. ANSI A112.21.1 - Floor Drains.
- u. ANSI A112.21.2 - Roof Drains.
- v. ANSI A112.26.1 - Water Hammer Arresters.
- w. PDI WH-201 - Water Hammer Arresters.
- x. ANSI/AWWA C606 – Grooved and Shouldered Joints

## PART 2 - PRODUCTS

### 2.1 PLUMBING FIXTURES & TRIM:

- A. All plumbing fixtures shall be provided complete with all required trim for a complete and operational system. All exposed trim shall be chrome plated. All piping penetrations through finished walls shall be provided with chrome escutcheons. All plumbing fixtures shall be caulked and sealed to surrounding surfaces. All sink traps shall be provided with a cleanout plug in the bottom of the trap. Interior exposed pipe, valves, and fixture trim, including trim behind all casework doors, shall be chrome plated. All fixture stop valves shall be quarter-turn brass ball type.

## 2.2 PIPING AND FITTINGS:

### A. General:

- 1. Underground sanitary sewer and storm drain lines shall be installed at 1/4" per foot slope, unless otherwise indicated. If such slope is not possible due to existing inverts, approval shall be obtained from the Architect/Engineer and the authority having jurisdiction before any piping is installed at a lesser slope.
- 2. Connections between piping of dissimilar materials shall be made with dielectric waterway fittings or unions.
- 3. Provide standard manufactured water hammer arresters at all flush valves. Size and locate per manufacturers recommendations. Provide access panels for access to all water hammer arresters.

### B. Domestic Hot and Cold Water:

- 1. Piping inside building above slab or above grade in crawl space shall be ASTM B88, Type "L", hard drawn copper. Fittings shall be ANSI/ASME B16.23 cast brass, or ANSI/ASME B16.29 wrought copper. Joints shall be ANSI/ASTM B32 solder, Grade 95-5, lead free.

### C. Sanitary Sewer and Vent:

- 1. Piping shall be cast iron CISPI 301, ASTM A888 hubless, with cast iron fittings. Joints shall be neoprene gaskets and stainless steel clamp-and-shield assemblies. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute.
- 2. All 90 degree waste line elbows shall be formed with 45 degree fittings. No single piece 90 degree fitting/elbow will be allowed.
- 3. All exposed vent piping located in occupied areas or rooms, is to be cast iron with cast iron fittings.

### D. Hanger and Supports:

- 1. Pipe hangers shall be provided to adequately support all piping systems. Hangers shall be vertically adjustable to provide for proper pitch and drainage. Hangers shall allow for expansion and contraction of the piping system. Reference "General Regulations" of the latest edition of the Uniform Plumbing Code.
- 2. Hangers for pipe sizes 1/2 to 6 inches shall be adjustable clevis type, or unistrut saddles with

all-thread hanger rod.

3. Hangers for hot pipe, sizes 6 inches and over shall be adjustable steel yoke, cast iron roll, double hanger type.
4. Vertical pipes shall be supported with steel riser clamps. Spacing interval requirements per "General Regulations" of the latest edition of the Uniform Plumbing Code.
5. All insulated piping shall be provided with minimum 18 gauge galvanized insulation shields, 12 inches long, and oversized hangers. Pipe sizes 2 inches and over shall also be provided with 12 inch long calcium silicate insulating blocks between the piping and the galvanized insulation shield.
  - a. Alternate: Insulated pipe support inserts may be provided at hanger, support, and guide locations on piping requiring insulation. The insert should consist of either Hydrous Calcium Silicate or Polyisocyanurate Foam insulation (Urethane) encircling the entire circumference of the pipe with a 360 deg. PVC (1.524 mm thick) or galvanized steel jacket and installed during the installation of the piping system. These insulated pipe support inserts shall be provided by the Mechanical Contractor and installed by the same during pipe support installation.
6. Hanger rod sizing and spacing for pipe shall be as follows:

Pipe Size	Minimum Rod Diameter	Maximum Spacing
To 1-1/4 inches	3/8 inch	6.5 feet
To 2 inches	3/8 inch	10 feet
To 3 inches	1/2 inch	10 feet
Cast Iron No-Hub	5/8 inch	5 feet and at joints
7. Provide hangers within 12 inches of each horizontal elbow.
8. Provide hangers with minimum 1-1/2 inches vertical adjustment.

## 2.3 INSULATION:

### A. General:

1. All insulation shall have composite fire and smoke hazard ratings, as tested by ASTM E-84, NFPA 255, and UL 723, not exceeding:

Flame Spread	25
Smoke Developed	50

### B. Piping:

1. All domestic hot and cold water lines shall be insulated with preformed insulation.
  - a. Fiberglass insulation with a vapor barrier jacket. Insulation shall have a conductivity not

exceeding 0.28 Btu-inch/hour-sq. ft.-degrees F. Laps and butt joints shall be sealed with pressure sensitive joint sealing tape of the same finish as the insulation jacket to provide a continuous vapor seal. Fittings and valves shall be insulated with PVC fitting covers and fiberglass insulation inserts, or with hydraulic setting insulating cement and four ounce canvass jacket with vapor barrier adhesive.

Insulation thicknesses shall be as follows:

<u>System</u>	<u>Pipe Sizes</u>
	<u>½" and above</u>
Domestic Cold Water	½"
Domestic Hot Water & Recirc.	1"

2. Insulation shall be installed in strict accordance with manufacturer's instructions.
3. Insulation shall be continuous through penetrations.
4. All insulation shall be installed in a neat and workmanlike manner.

## 2.4 VALVES & STRAINERS:

### A. Gate Valves:

1. Valves 2-inches and smaller shall be cast bronze body, ASTM B-62, rising stem, 200 psi WOG. Stems shall be dezincification-resistant silicon bronze, ASTM B-371, or low-zinc alloy, ASTM B-99. If unable to use a rising stem valve due to inadequate clearance, use non-rising stem gate valve. Valves shall comply with MSS SF-80. Valves over 2-inches shall be iron body, bronze trim, rising stem and handwheel, flanged ends. Valves shall comply with MSS SP-70.

### B. Globe Valves:

1. Valves 2-inches and smaller shall be cast bronze body, ASTM B-62, renewable composition disc, 200 psi WOG, ASTM B-62, rising stem and handwheel. Stems shall be of dezincification-resistant silicon bronze, ASTM B-371, or low-zinc alloy, ASTM B-99. Valves over 2-inches shall be iron body, bronze trim, rising stem and handwheel, plug type disc, flanged ends. Valves shall comply with MSS SP-85.

### C. Ball Valves:

1. Valves 2-inches and smaller shall be cast brass body, chrome-plated brass ball, teflon seats, and lever handle, 600 psi CWP. Valves shall comply with MSS SP-110. Valves over 2-inches shall be ductile iron or cast steel body, chrome plated steel ball, teflon seats, and lever handle. Victaulic series 726 or Anvil Gruvlok ball valves are acceptable if grooved piping is used.

## PART 3 - EXECUTION

### 3.1 WORKMANSHIP:

A. General:

1. Install all piping, fixtures, equipment, and accessories as shown, and in strict accordance with the plumbing laws, rules, and regulations of the State and/or City. All work shall be done in a neat and orderly fashion, and left in a condition satisfactory to the Architect/Engineer.

B. Piping:

1. All piping shall be run parallel or perpendicular to established building lines. Install piping so as to allow for expansion. Waste and vent piping occurring above floor slab shall be installed true and plumb. Extend vents at least 1 foot above roof, and provide watertight flashing sleeves. Excavation and backfill shall be in accordance with Section 15100 of these specifications.

C. Fixtures:

1. Install fixtures true and plumb with building walls. Caulk all plumbing fixtures at joints along walls, countertops, and other intersecting surfaces. Locate fixtures as shown and per manufacturer's instructions. Furnish all required trim for fixtures to provide a complete and workable installation.

3.2 TESTS:

A. General:

1. All piping, fixtures, and equipment shall be inspected and approved before concealing or covering. All work shall be tested as required by Section 15100 of these specifications, and shall be leakproof before inspection is requested. All tests shall be repeated if required by those making the inspection.
2. All potable water systems shall be flushed and disinfected in accordance with Section 15100 of these specifications. Following disinfection, system shall be flushed and water sampled to show compliance with requirements of public health authority having jurisdiction. If tested water does not meet requirements, disinfecting shall be repeated until water quality meets requirements.
3. Grooved ends shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove. Gasket shall be molded and produced by Victaulic Company, or equal. Verify gasket grade is suitable for the intended service. The grooved coupling manufacturer's factory trained representative shall provide on-site training for contractor's field personnel the use of grooving tools, application of groove, and installation of grooved end products.
  - a. All grooved joint couplings, fittings, valves and specialties shall be the products of Victaulic Company, or equal.
4. Install the grooved piping in accordance with the latest recommendations as published by the manufacturer. Pipe shall be square cut,  $\pm 0.30"$ , properly deburred and cleaned. Mark pipe ends at the required location using a gauge supplied by the manufacturer to ensure full insertion into the coupling or fitting during assembly. Use a manufacturer's tool with the

proper sized jaw for pressing.

**B. Fixtures and Equipment:**

1. Fill all plumbing fixtures with water and check for leaks or retarded flow. Repair as required. Adjust each piece of plumbing equipment as required to insure proper functioning. Leave all fixtures and equipment in first class operating condition.

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(208) 384-0585

**PIPING SYSTEM TEST REPORT**

STRUCTURE/BUILDING: \_\_\_\_\_ TEST NUMBER: \_\_\_\_\_

LOCATION: \_\_\_\_\_ CONTRACT NO. \_\_\_\_\_

DESCRIPTION OF SYSTEM/PIPING BEING TESTED: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

<u>Description of Test Performed</u>	<u>Test Pressure</u>	<u>Test Duration</u>	<u>Pass/Fail</u>
Hydrostatic: _____	_____ P.S.I.	_____	_____
Inert Gas: _____	_____ P.S.I.	_____	_____
Compressed Air: _____	_____ P.S.I.	_____	_____
Other (describe below): _____	_____ P.S.I.	_____	_____

NAME AND TITLE OF PERSON IN CHARGE OF PERFORMING TEST'S FOR CONTRACTOR:

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_

*I hereby certify that the above described system has been tested as indicated above and found to be entirely satisfactory as required in the contract specifications.*

Signature of Inspector: \_\_\_\_\_ Date: \_\_\_\_\_

REMARKS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

END OF SECTION 15200

## SECTION 15300 - HEATING, VENTILATING, AND AIR CONDITIONING

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. This section covers the work necessary for the heating, ventilating, and air conditioning system, complete. The Mechanical General Provisions, Section 15100, is to be included as a part of this section of the specifications.

#### 1.2 CODES & STANDARDS

- A. The heating, ventilating, and air conditioning system shall be installed in accordance with the latest edition of the following codes and standards:
  - 1. International Mechanical Code (IMC)
  - 2. International Building Code (IBC)
  - 3. American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)
  - 4. National Fire Protection Association (NFPA)
  - 5. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)

### PART 2 - PRODUCTS

#### 2.1 AIR HANDLING UNITS AND APPURTENANCES

- A. Energy Recovery Ventilator (plate type)
  - 1. Description:
    - a. Unit shall be a belt driven energy recovery ventilator.
    - b. Packaged heat recovery ventilator with a factory installed flat plate heat exchanger.
  - 2. Certifications:
    - a. Unit shall be constructed in accordance with CSA C22.2 and UL 1812 and shall carry the ETL and (C)ETL label of approval. Unit shall bear the AMCA certified ratings seal for air performance.
    - b. Insulation shall comply with NFPA 90A requirements for flame spread and smoke generation.
  - 3. Construction:
    - a. Packaged heat recovery ventilator consisting of a flat plate heat exchanger, ventilation air

fan, exhaust air fan, necessary dampers, temperature sensors and controls. The unit shall include an aluminum or polypropylene heat exchanger with no moving parts for sensible heat transfer. Cabinet shall be constructed of 20 gauge G90 galvanized steel with 12 gauge galvanized frame. Cabinet shall be insulated throughout with a minimum 1" (25mm) foil faced fire retardant material. Access to all components that require servicing shall be provided through sealed and easily removable access panels. Flat plate heat exchanger sections shall be easily removable from the unit to allow for cleaning and maintenance.

4. Blowers:

- a. Fan ratings shall be based on tests made in accordance with AMCA Standard 210.
- b. Blowers must be selected to operate on a stable, efficient part of the fan curve when delivering air quantities scheduled against static of the system.
- c. Fan blades shall be statically and dynamically balanced and tested prior to shipment.
- d. Fan shall be provided with internal vibration isolation mounts.
- e. Fan discharge shall be as noted on the plans.
- f. Fans shall have sealed ball bearings with L10 life expectancy.

5. Motors:

- a. Motors shall be continuous duty, permanently lubricated and matched to the fan loads.
- b. Motors shall meet new EPAC regulations for efficiency and shall have inverter spike resistance wire for protection (where applicable).

6. Flat Plate Heat Exchanger:

- a. Rugged polypropylene flat plate heat exchanger designed for general purpose or corrosive applications and shall meet UL 94 HB flame spread test.
- b. Energy recovery performance for component shall be rated in accordance with ARI Standard 1060-2000 and certified to ARI.

7. Dampers:

- a. Unit shall include a non-insulated, motorized (low leak) supply damper.
- b. Unit shall include a non-insulated, motorized (low leak) exhaust damper.

8. Controls and Electrical:

- a. All service connectors shall be quick disconnect type.

- b. Unit circuitry shall allow the following operational characteristics:
    - 1. dry contacts for occupancy control
    - 2. selection of low or high speeds
    - 3. 24CAC contacts (30VA) for external components
    - 4. unoccupied recirc contacts
  - c. Unit shall come equipped with a Nema 4 non-fused disconnect with single power point connection.
  - d. All controls shall be factory mounted and wired, requiring only field installation of remote sensing devices and wiring to unit mounted terminal strips.
9. Defrost:
- a. See equipment schedule on plans for specific requirements.
10. Manufacturer, Capacity & Accessories:
- a. See equipment schedule on plans for specific requirements.

## 2.2 AIR DISTRIBUTION

### A. Ductwork:

- 1. Low pressure ductwork shall be fabricated from galvanized sheet metal, unless otherwise indicated. Construction requirements shall be in accordance with SMACNA - Low Pressure Duct Construction Standards, latest edition. All sheet metal ductwork shall be sealed with McGill United Sheet Duct Sealer or equal, in accordance with the International Energy Compliance Code, latest edition. Low pressure ductwork shall be constructed to the following SMACNA static pressure standards:
  - a. Supply air ductwork = 2" W.G.
  - b. Return, Exhaust, Outside Air Intake ductwork = 1" W.G.
- 2. Low pressure ductwork which is exposed or located in mechanical rooms shall be fabricated from galvanized sheet metal. Construction requirements shall be in accordance with SMACNA Low Pressure Duct Construction Standards, latest edition.

### B. Duct Accessories:

- 1. Turning vanes shall be installed in all rectangular or square elbows. Vanes shall be installed in vane side rails. Vanes shall be single wall vanes, and be fabricated and installed per SMACNA standards.
- 2. Volume dampers shall be fabricated from galvanized steel in accordance with SMACNA standards. Dampers shall have a continuous galvanized steel shaft, with damper regulators and end bearings. Dampers located above inaccessible ceilings (hard ceilings) shall be furnished with concealed ceiling damper regulators. Dampers shall be pressure rated equal to the design

duct pressure rating.

3. Flexible connections shall be provided at all rotating fan equipment. Connectors shall be of fire, water, and weather resistant material.

C. Diffusers, Registers, Louvers, Grilles, Weathercaps:

1. See Drawings for requirement.

## 2.3 INSULATION

A. General:

1. All insulation shall have composite fire and smoke hazard ratings, as tested by ASTM E-84, NFPA 255, and UL 723, not exceeding:

Flame Spread	25
Smoke Developed	50

B. Ductwork - Internal Insulation:

1. Insulation shall be flexible fiberglass duct liner. Liner shall be attached with 100% coverage of manufacturers recommended adhesive and welded or mechanically fastened galvanized steel pins. All exposed edges of liner shall be coated with adhesive. Duct dimensions shown are net air side face-to-face of duct liner. The following ducts shall be internally insulated:
  - a. Supply and Return ducts within 15'-0" of air handler
  - b. Supply and Return ducts in mechanical rooms
  - c. Ducts as indicated on plans
  - d. Outside air intake ducts
2. Insulation thickness & "R" values shall be as follows:
  - a. R-5 (1½" thick) – ducts located in unconditioned spaces (such as above ceiling, but below roof insulation, or buried ductwork)
  - b. R-8 (2" thick) – ducts located outside of the building's insulation envelope (such as above the roof).

## 2.4 VIBRATION ISOLATION

A. General:

1. All rotating equipment and appurtenances connected to rotating equipment shall be vibration isolated from the supporting structure. No metal to metal contact will be permitted between fixed and floating parts. All metal isolators exposed to weather shall be hot dipped galvanized after fabrication. Piping connected to rotating equipment shall be hung with spring hangers for first 50 pipe diameters.

B. Spring Hangers:

1. Vibration hanger shall contain a spring and double deflection neoprene element in series. Spring shall have a diameter not less than 0.8 of compressed operating spring height. Spring shall have a minimum additional spring travel of 50 percent between design height and solid height. Spring shall permit a 15 degree angular misalignment without rubbing on hanger box.

## 2.5 SEISMIC SUPPORTS

- A. All equipment, ductwork, and piping shall be seismically supported as required by the International Building Code, latest edition. Support details shall be as indicated on the Drawings.

## 2.6 CONTROL SYSTEM

### A. General:

1. The Mechanical Contractor shall be responsible for a complete and operable control system, including equipment, installation, and accessories required to perform the required control functions. All control conduit and wiring shall be furnished by the Electrical Contractor. Thermostats, sub-base switches, remote control devices, etc., shall be supplied by the Mechanical Contractor and installed and connected by the Mechanical Contractor. The Mechanical Contractor shall furnish the Electrical Contractor with wiring diagrams for all mechanical equipment and controls.
2. The control system shall be basically electric, with supplementary electronic devices as required.

### B. Control Equipment and Accessories:

1. Equipment Control Schematics.

## PART 3 - EXECUTION

### 3.1 WORKMANSHIP

#### A. General:

1. Install all materials and equipment as shown and in strict accordance with the applicable codes for the State and/or city. Plans do not attempt to show exact details of all piping and ductwork, and no extra payment will be allowed for offsets required due to obstructions by other trades. All work shall be done in a neat and orderly fashion and left in a condition satisfactory to the Architect/Engineer.
2. All piping shall be run parallel or perpendicular to established building lines. Install piping so as to allow for expansion. Install all valves with stems horizontal or above. Install air vents at all high points. Provide all piping which passes through walls, floors, or ceilings with standard weight pipe sleeves.

#### B. Insulation:

1. All piping insulation shall be applied over clean, dry surfaces after system has been pressure tested and any leaks corrected. Finished appearance of all insulation shall be smooth and continuous. Provide coat of insulating cement where needed to obtain this result.
2. Flexible duct insulation shall be secured to duct surface with 4-inch wide bands of adhesive applied on maximum 18-inch centers. Additional galvanized tie-wire support shall be furnished as required and recommended by the insulation manufacturer.

C. Diffusers, Registers and Grilles:

1. All diffusers, grilles, and registers shall be installed tight on their respective mounting surfaces and shall be accurately centered on ceiling tile, recesses, windows, or doors.

D. Ductwork:

1. All sheet metal work shall be done by qualified, experienced mechanics in accordance with the requirements of ASHRAE and the latest edition of the applicable SMACNA Manual. All ductwork shall be installed in a neat and orderly manner, and shall be adequately supported to prevent vibration or sagging. All sheet metal ductwork shall be sealed with United-Sheet Metal Duct Sealer or equal.

END OF SECTION 15300

## SECTION 16010 - ELECTRICAL GENERAL PROVISIONS

### PART 1 - GENERAL

#### 1.1 CONDITIONS AND REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Provisions of this Section shall apply to all Sections of Division 16.

#### 1.2 SCOPE OF WORK

- A. Furnish and install all materials and equipment and provide all labor required and necessary to complete the work shown on the drawings and/or specified in all Sections of Division 16 and all other work and miscellaneous items, not specifically mentioned, but reasonably inferred for a complete installation, including all accessories required for testing the system. It is the intent of the drawings and specifications that all systems be complete and ready for operation.

#### 1.3 CODE COMPLIANCE

- A. All work and materials shall comply with the latest rules, codes and regulations, including, but not limited to, the following:
  - 1. Occupational Safety and Health Act Standards (OSHA)
  - 2. NFPA #70 – National Electric Code (NEC)
  - 3. ADA Standards – Americans with Disabilities Act
  - 4. ANSI/IEEE C-2 – National Electrical Safety Code
  - 5. NECA – Standard of Installation
  - 6. International Building Code
  - 7. International Fire Code
  - 8. International Energy Conservation Code
  - 9. NFPA #72 – Fire Code
  - 10. NFPA #101 – Life Safety Code
  - 11. All other applicable Federal, State and local laws and regulations.
- B. Work to be executed and inspected in accordance with local codes and ordinances. Permits, fees or charges for inspection or other services shall be paid for by the contractor. Local codes and ordinances are to be considered as minimum requirements and must be properly executed without expense to the owner; but do not relieve the contractor from work shown that exceeds minimum requirements.

#### 1.4 CONDITIONS AT SITE

- A. Visit to site is recommended of all bidders prior to submission of bid. All will be held to have familiarized themselves with all discernible conditions and no extra payment will be allowed for work required because of these conditions, whether specifically mentioned or not.
- B. Lines of other service that are damaged as a result of this work shall be promptly repaired at no expense to the owner to the complete satisfaction of the owner.

## 1.5 DRAWINGS AND SPECIFICATIONS

- A. All drawings and all specifications shall be considered as a whole and work of this Division shown anywhere therein shall be furnished under this Division.
- B. Drawings are diagrammatic and indicate the general arrangement of equipment and wiring. Most direct routing of conduits and wiring is not assured. Exact requirements shall be governed by architectural, structural and mechanical conditions of the job. Consult all other drawings in preparation of the bid. Extra lengths of wiring or addition of pull or junction boxes, etc., necessitated by such conditions shall be included in the bid. Check all information and report any apparent discrepancies before submitting bid.
- C. Change to location, type, function, brand name, finish, etc., shall not be made without permission of owner.
- D. Some equipment is specifically designated on the drawings. It is not the intent to sole source any item unless explicitly stated. Items have been specified based upon design requirements. All bidders are encouraged to submit products for approval. Prior approval must be obtained as required by these contract documents. Bids submitted with non-approved items will be considered invalid and bid will be forfeit. Submittals received by the engineer after award of contract on non-approved equipment will not be reviewed nor will they be returned.

## 1.6 SAFETY AND INDEMNITY

- A. Safety: The contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours.
- B. No act, service, drawing review or construction review by the owner is intended to include review of the adequacy of the contractor's safety measures in, on, or near the construction site.

## 1.7 CONSTRUCTION OBSERVATION BY THE OWNER

- A. Prior to covering: any major portion of the materials installed under this section, notify the owner so that an observation can be made. Notification shall be made at least three (3) working days in advance of the date the items will be covered.

## 1.8 INSTRUCTION OF OWNER'S PERSONNEL

- A. The contractor shall conduct an on-site instructional tour of the entire project. The personnel designated by the owner shall be instructed in: operation of all electrical systems, trouble-shooting procedures, preventative maintenance procedures, uses of Operation and Maintenance manuals, relamping and cleaning of lighting fixtures and operation of all special systems.
- B. Contractor will include in his bid 8 hours of instruction time to be held at the project location after substantial completion for instruction of owner's personnel. Coordinate time and number of owner personnel to be present and provide schedule to engineer.

## 1.9 PROJECT COMPLETION

- A. Upon completion of all work and operational checks on all systems, the contractor shall request that a final construction observation be performed.

- B. The owner shall compile a punch list of items to be completed or corrected. The contractor shall notify the owner upon completion of the items.

#### 1.10 GUARANTEE

- A. All work under this section shall be guaranteed in writing to be free of defective work, materials, or parts for a period of one (1) year, except lamps, which shall be guaranteed for ninety (90) days after final acceptance of the work under the contract.
- B. Repair, revision or replacement of any and all defects, failure or inoperativeness shall be done by the contractor at no cost to the owner.

### PART 2 - PRODUCTS

#### 2.1 MATERIAL APPROVAL

- A. The design, manufacturer and testing of electrical equipment and materials shall conform to or exceed latest applicable NEMA, IEEE or ANSI standards.
- B. All materials must be new and UL listed. Materials that are not covered by UL testing standards shall be tested and approved by an independent testing laboratory or a governmental agency, which laboratory shall be acceptable to the owner and code enforcing agency.

#### 2.2 SHOP DRAWINGS AND MATERIALS LIST

- A. Submit shop drawings and materials lists as specified for review. Seven (7) copies of submittals shall be presented to the owner.

#### 2.3 OPERATION AND MAINTENANCE MANUALS

- A. Submit four (4) sets of Operation and Maintenance Manuals of equipment to owner.

#### 2.4 RECORD DRAWINGS

- A. Submit record drawings to owner.

#### 2.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle materials in a manner to prevent damage.
- B. Protect equipment from weather and dampness.

### PART 3 - EXECUTION

#### 3.1 WORKMANSHIP AND CONTRACTOR'S QUALIFICATIONS

- A. Only quality workmanship will be accepted. Haphazard or poor installation practice will be cause for rejection of work.
- B. Provide experienced foreman with a minimum of three years experience working on this type of building placed in charge of this work at all times.

### 3.2 COORDINATION

- A. Coordinate work with other trades to avoid conflict and to provide correct rough-in and connection for equipment furnished under trades that require electrical connections. Inform contractors of other trades of the required access to and clearances around electrical equipment to maintain serviceability and code compliance.
- B. Verify equipment dimensions and requirements with provisions specified under this Section. Check actual job conditions before fabricating work. Report necessary changes in time to prevent needless work. Changes or additions subject to additional compensation, which are made without the authorization of the owner, shall be at contractor's risk and expense.

### 3.3 MANUFACTURER'S INSTRUCTIONS

- A. Where the specifications call for an installation to be made in accordance with manufacturer's recommendations, a copy of such recommendations shall at all times be kept in the job superintendent's office and shall be available to the owner.
- B. Follow manufacturer's instructions where they cover points not specifically indicated on drawings and specifications. If they are in conflict with the drawings and specifications obtain clarification from the owner before starting work.

### 3.4 QUALITY ASSURANCE

- A. The contractor shall insure that all workmanship, all materials employed, all required equipment and the manner and method of installation conforms to accepted construction and engineering practices, and that each piece of equipment is in satisfactory working condition to satisfactorily perform its functional operation.
- B. Provide quality assurance tests and operational check on all components of the electrical distribution system, all lighting fixtures, and special systems.

### 3.5 CUTTING AND PATCHING

- A. Perform all cutting and fittings required for work of this section in rough construction of the building.
- B. All patching of finished construction of building shall be performed under the sections of specifications covering these materials.
- C. No joists, beams, girders or columns shall be cut by any contractor without obtaining written permission from the owner.

END OF SECTION 16010



## SECTION 16120 - CONDUCTORS AND CABLES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

#### 1.3 COORDINATION

- A. Coordinate layout and installation of cables with other installations.
- B. Revise locations and elevations from those indicated, as required to suit field conditions and as approved by the owner.

### PART 2 - PRODUCTS

#### 2.1 BUILDING WIRES AND CABLES

- A. Conductors: Stranded, copper, 600 volt insulation, type THHN/THWN.
- B. Conductors, #2 AWG and smaller: stranded (no solid wire acceptable), copper, 600 volt insulation, type THHN/THWN.
- C. Color-code 208/120-V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:
  - 1. Phase A: Black.
  - 2. Phase B: Red.
  - 3. Phase C: Blue.
  - 4. Neutral: White.
  - 5. Ground: Green.
  - 1. Isolated ground: Green with yellow tracer.
- D. Wire connectors and splices: units of size, ampacity rating, material, type and class suitable for service indicated.

### PART 3 - EXECUTION

#### 3.1 GENERAL WIRING METHODS

- A. Examine raceways and building finishes to receive wires and cables for compliance with requirements for installation tolerances and other conditions affecting performance of wires and cables. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Use no wire smaller than #12 AWG for power and lighting circuits and no smaller than #14 AWG for control wiring.
- C. Use #10 AWG conductor for 20 Amp, 120 volt branch circuits longer than 75 feet, and for 20 Amp.
- D. Place an equal number of conductors for each phase of a circuit in the same raceway or conduit.
- E. Splice only in junction or outlet boxes.
- F. Neatly train or lace wiring inside boxes, equipment, and panelboards.
- G. Make conductor lengths for parallel circuits equal.

### 3.2 INSTALLATION

- A. Install wires and cables as indicated, according to manufacturer's written instructions and NECA's "Standard of Installation."
- B. Remove existing wires from raceway before pulling in new wires and cables.
- C. Pull Conductors: Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket weave wire/cable grips that will not damage cables or raceway.
- E. Install exposed cables, parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables above accessible ceilings; do not rest on ceiling tiles. Do not fasten cables to ceiling support wires. Use cable ties to support cables from structure.

### 3.3 CONNECTIONS

- A. Conductor Splices: Keep to minimum.
- B. Install splices and tapes that possess equivalent or better mechanical strength and insulation ratings than conductors being spliced.
- C. Use splice and tap connectors compatible with conductor material.
- D. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.
- E. Connect outlets and components to wiring and to ground as indicated and instructed by manufacturer.
- F. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values.
- G. Terminate spare conductors with electrical tape.

### 3.4 LABELING

- A. Provide Brady wire markers or equivalent on all conductors. All wire shall be labeled in each box and panel with the circuit number and panel identification.

### 3.5 FIELD QUALITY CONTROL

- A. Inspect wire and cable for physical damage.
- B. Perform continuity testing on all power and equipment branch circuit conductors. Verify proper phasing connections.

END OF SECTION 16120

## SECTION 16130 - RACEWAYS AND BOXES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

#### 1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. FMC: Flexible metal conduit.
- C. IMC: Intermediate metal conduit.
- D. LFMC: Liquidtight flexible metal conduit.
- E. RMC: Rigid metal conduit.
- F. RNC: Rigid nonmetallic conduit.

#### 1.4 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

#### 1.5 COORDINATION

- A. Coordinate layout and installation of raceways and boxes with other construction elements to ensure adequate headroom, working clearance, and access.

### PART 2 - PRODUCTS

#### 2.1 METAL CONDUIT AND TUBING

- A. Rigid Steel Conduit: ANSI C80.1.
- B. IMC: ANSI C80.6.
- C. PVC coated Steel Conduit and Fittings: NEMA RN 1; rigid steel conduit with external 40 mil PVC coating and internal two mil urethane coating.

- D. EMT and Fittings: ANSI C80.3. Fittings: Set-screw type.
- E. FMC: Zinc-coated steel.
- F. LFMC: Flexible steel conduit with PVC jacket. Fittings: NEMA FB 1; compatible with conduit/tubing materials.

## 2.2 NONMETALLIC CONDUIT AND TUBING

- A. RNC: NEMA TC 2, Schedule 40 PVC. Fittings: NEMA TC 3; match to conduit and material.

## 2.3 METAL WIREWAYS

- A. Material: Sheet metal sized and shaped as indicated.
- B. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- C. Finish: Manufacturer's standard enamel finish.

## 2.4 OUTLET AND DEVICE BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. Cast-Metal Boxes: NEMA FB 1, Type FD, cast box with gasketed cover.

## 2.5 PULL AND JUNCTION BOXES

- A. Small Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. Cast-Metal Boxes: NEMA FB 1, cast aluminum with gasketed cover.

## 2.7 ENCLOSURES AND CABINETS

- A. Hinged-Cover Enclosures: NEMA 250, Type 1, 3R, or 4, with continuous hinge cover and flush latch, key operable.
  - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
- B. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage, and include accessory feet where required for freestanding equipment.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine surfaces to receive raceways, boxes, enclosures, and cabinets for compliance with installation tolerances and other conditions affecting performance of raceway installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 WIRING METHODS

- A. Outdoors: Use the following wiring methods:

1. Exposed: Rigid steel or IMC.
2. Concealed: Rigid steel or IMC.
3. Underground, Single Run: RNC or PVC Externally Coated Rigid Steel Conduit where required by NEC 517.13.
4. Underground, Grouped: RNC or PVC Externally Coated Rigid Steel Conduit where required by NEC 517.13.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
6. Boxes and Enclosures: NEMA 250, Type 3R or Type 4.

- B. Indoors: Use the following wiring methods:

1. Exposed: EMT or "Wiremold" metallic raceways or equal.
2. Exposed in public areas: "Wiremold" metallic raceways or equal. Use of exposed raceways in public areas must be approved by the architect prior to installation for each location. Use of exposed EMT in areas visible to the public is not allowed unless specifically approved by the architect prior to installation. Replacement of unapproved installations of exposed raceways will be at the expense of the contractor if deemed necessary by the architect or engineer.
3. Concealed: EMT or MC-Cable. Note: MC-Cable is not approved for "homeruns"
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC; except in wet or damp locations, use LFMC.
5. Damp or Wet Locations: Rigid steel conduit.
6. Boxes and Enclosures: NEMA 250, Type 1, except as follows:
  - a. Damp or Wet Locations: NEMA 250, Type 4, stainless steel.

### 3.3 INSTALLATION

- A. Install raceways, boxes, enclosures, and cabinets as indicated, according to manufacturer's written instructions.
- B. Minimum Raceway Size: 1/2-inch trade size. 3/4-inch minimum for "homeruns".
- C. Conceal conduit and EMT, unless otherwise indicated, within finished walls, ceilings, and floors.
- D. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- E. Install raceways level and square and at proper elevations. Provide adequate headroom.
- F. Complete raceway installation before starting conductor installation.
- G. Route exposed conduit and conduit above accessible ceilings parallel and perpendicular to walls and adjacent piping.

- H. Use temporary closures to prevent foreign matter from entering raceways.
- I. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portion of bends is not visible above the finished slab.
- J. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and straight legs of offsets parallel, unless otherwise indicated.
- K. Use raceway fittings compatible with raceways and suitable for use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings, unless otherwise indicated.
- L. Run concealed raceways, with a minimum of bends, in the shortest practical distance considering the type of building construction and obstructions, unless otherwise indicated.
- M. Install exposed raceways parallel to or at right angles to nearby surfaces or structural members, and follow the surface contours as much as practical.
  - 1. Run parallel or banked raceways together, on common supports where practical.
  - 2. Make bends in parallel or banked runs from same centerline to make bends parallel. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
- O. Join raceways with fittings designed and approved for the purpose and make joints tight.
  - 1. Make raceway terminations tight. Use bonding bushings or wedges at connections subject to vibration. Use bonding jumpers where joints cannot be made tight.
  - 2. Use insulating bushings to protect conductors.
- P. Tighten set screws of threadless fittings with suitable tools.
- Q. Terminations: Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against the box. Where terminations are not secure with 1 locknut, use 2 locknuts: 1 inside and 1 outside the box.
- R. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align raceways so the coupling is square to the box and tighten the chase nipple so no threads are exposed.
- S. Install pull wires in empty raceways. Utilize polyester line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of the pull wire.
- U. Install raceway sealing fittings according to manufacturer's written instructions. Locate fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
  - 1. Where conduits pass from warm to cold locations, such as the boundaries of refrigerated spaces.
  - 2. Where otherwise required by NEC.
- V. Apply firestopping to cable and raceway penetrations of fire-rated floor, ceiling and wall assemblies to achieve fire-resistance rating of the assembly.
- W. Route conduit through roof openings for piping and ductwork where possible; otherwise, install roof penetrations in accordance with roofing system requirements. Coordinate with roofing installer.

- X. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with the finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches above the floor. Install screwdriver-operated, threaded flush plugs flush with floor for future equipment connections.
- Y. Flexible Connections: Use maximum of 6 feet of flexible conduit for recessed and semi-recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use liquidtight flexible conduit in wet or damp locations. Install separate ground conductor across flexible connections.
- Z. PVC Externally Coated, Rigid Steel Conduits: Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating after installing conduits.
- AA. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying the raceways to receptacle or fixture ground terminals.
- BB. Conduits shall not be routed on or above the roof without prior approval from the Engineer. Instead, the branch circuits shall be routed at the structure level below the roof to feed roof-top equipment. When approval is granted to route conduits on or above the roof, the conduits shall be strapped to 4"x4"x18" and supported on blocks of wood at intervals not exceeding NEC requirements. The conduits shall not be rested directly on the roof. It shall be permissible to penetrate the roof adjacent mechanical or electrical equipment to power that respective equipment.

### 3.4 SUPPORT INSTALLATION

- A. Install support devices to securely and permanently fasten and support electrical components.
- B. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assemblies and for securing hanger rods and conduits.
- C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers, at least every 8 feet.
- D. Size supports for multiple raceway installations so capacity can be increased by a 25 percent minimum in the future.
- E. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.
- F. Install 1/4-inch diameter or larger threaded steel hanger rods, unless otherwise indicated.
- G. Spring-steel fasteners specifically designed for supporting single conduits or tubing may be used instead of malleable-iron hangers for 1-1/2-inch and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings and for fastening raceways to slotted channel and angle supports.
- H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.
- I. Simultaneously install vertical conductor supports with conductors.
- J. Separately support cast boxes that are threaded to raceways and used for fixture support. Support sheet-metal boxes directly from the building structure or by bar hangers. If bar hangers are used, attach bar to raceways on opposite sides of the box and support the raceway with an approved fastener not more than 24 inches from the box.

- K. Install metal channel racks for mounting cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices unless components are mounted directly to structural elements of adequate strength.
- L. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.
- M. Securely fasten electrical items and their supports to the building structure, unless otherwise indicated. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit. Perform fastening according to the following unless other fastening methods are indicated:
  - 1. Masonry: Toggle bolts on hollow masonry units and expansion bolts on solid masonry units.
  - 2. New Concrete: Concrete inserts with machine screws and bolts.
  - 3. Existing Concrete: Expansion bolts.
  - 4. Steel: Spring-tension clamps on steel.
  - 5. Light Steel: Sheet-metal screws.
  - 6. Fasteners: Select so the load applied to each fastener does not exceed 25 percent of its proof-test load.
- N. Do not drill structural steel members.
- O. All supports and attachments shall meet project seismic zone requirements.

### 3.5 BOX INSTALLATION

- A. Do not install boxes back-to-back in walls.
- B. Locate boxes in masonry walls to require cutting of masonry unit edge only. Coordinate masonry cutting to achieve neat openings for boxes.
- C. Provide knockout closures for unused openings.
- D. Support boxes independently of conduit except for cast boxes that are connected to two rigid metal conduits, both supported within 12 inches of box.
- E. Use 4" boxes with multiple-gang mudring where more than one device are mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.
- F. Install boxes in walls without damaging wall insulation.
- G. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
- H. Position outlets to locate lighting fixtures as shown on reflected ceiling plans.
- I. In inaccessible ceiling areas, position outlets and junction boxes within 6 inches of recessed luminaire, to be accessible through luminaire ceiling opening.
- J. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness. Use stamped steel stud bridges for flush outlets in hollow stud walls, and adjustable steel channel fasteners for flush ceiling outlet boxes.
- K. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.

- L. For boxes installed in metal construction, use rigid support metal bar hangers or metal bar fastened to two studs or with metal screws to metal studs.
- M. Install hinged-cover enclosures and cabinets plumb. Support at each corner.
- N. Locate pull and junction boxes above accessible ceilings or in unfinished areas. Support pull and junction boxes independent of conduit.
- O. Minimum box size to be 4" square by 2 1/8" deep.

### 3.6 LABELING

- A. Label coverplate of all pull and junction boxes by system served. Indicate panel circuits for power and lighting boxes.

### 3.7 CLEANING

- A. On completion of installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish, including chips, scratches, and abrasions.

END OF SECTION 16130

## SECTION 16140 - WIRING DEVICES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes receptacles, switches, and finish plates.

#### 1.4 SUBMITTALS

- A. Submit shop drawings and product data.

#### 1.5 COORDINATION

- A. Receptacles for Owner-Furnished Equipment: Match plug configurations.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturers:

- 1. Wiring Devices:

- a. Bryant Electric, Inc.
    - b. GE Company; GE Wiring Devices.
    - c. Hubbell, Inc.; Wiring Devices Div.
    - d. Leviton Manufacturing Co., Inc.
    - e. Pass & Seymour/Legrand; Wiring Devices Div.
    - f. Cooper Wiring Devices
    - g. Or approved equal.

#### 2.2 RECEPTACLES

- A. Straight-Blade and Locking Receptacles: Specification grade (construction specification grade prohibited), white color.

#### 2.2 SWITCHES

- A. Snap Switches: General-duty, quiet type, rated 20 amperes, 120/277 volts AC. Handle: white plastic. Pilot light type (where indicated): lighted handle.

## 2.4 WALL PLATES

- A. Single and combination types match corresponding wiring devices.
  - 1. Cover plate: Smooth white plastic.
  - 2. Cover plate for surface mounted devices: Galvanized steel.
  - 3. Weatherproof cover plate: Gasketed cast metal with hinged gasketed device covers.
  - 4. Plate-Securing Screws: Metal with head color to match plate finish.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install devices and assemblies plumb and secure.
- B. Install wall plates when painting is complete.
- C. Install wall dimmers to achieve indicated rating after derating for ganging as instructed by manufacturer.
- D. Do not share neutral conductor on load side of dimmers.
- E. Arrangement of Devices: Unless otherwise indicated, mount flush, vertically, with height as indicated or six inches above counters.
- F. Group adjacent switches under single, multigang wall plates.
- G. Protect devices and assemblies during painting.
- H. Install wall switches with off position down.
- I. Install cover plates on switch, receptacle, and blank outlets.

### 3.2 IDENTIFICATION

- A. Switches and receptacles: Identify panelboard and circuit number from which served. Use machine-printed, pressure-sensitive, abrasion-resistant label tape on the outside of the face plate for receptacles and on the inside of the face plate for switches, utilize durable wire markers or tags within all outlet boxes. Labels shall be Brother ½" TZ tape, black ink on clear, extra-strength adhesive tape, with size 18 text or engineer approved equal. Use matching label printer.

### 3.3 CONNECTIONS

- A. Connect wiring device grounding terminal to outlet box with bonding jumper.
- B. Connect wiring device grounding terminal to branch-circuit equipment grounding conductor.
- C. Tighten electrical connectors and terminals according to manufacturers published torque-tightening values.

### 3.4 FIELD QUALITY CONTROL

- A. Test wiring devices for proper polarity and ground continuity. Check each device to verify operation.
- B. Replace damaged or defective components.

### 3.5 3.5 CLEANING

- A. Internally clean devices, device outlet boxes, and enclosures. Replace stained or improperly painted wall plates or devices.

END OF SECTION 16140

## SECTION 16145 - LIGHTING CONTROL DEVICES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.
- B. Related Sections include the following:
  - 1. Section 16140 - Wiring Devices for wall-box dimmers and manual light switches.

#### 1.3 SUBMITTALS

- A. Submit shop drawings and product data, including all wiring diagrams.

### PART 2 - PRODUCTS

#### 2.1 GENERAL LIGHTING CONTROL DEVICE REQUIREMENTS

- A. Line-Voltage Surge Protection: Include in all 120- and 277-V solid-state equipment. Comply with UL 1449.
- B. PRODUCT SUPPORT AND SERVICE
  - i. Factory Support: Factory telephone support shall be available at no cost to the owner. Factory assistance shall consist of solving programming or application questions concerning the control equipment.
- C. WARRANTY
  - i. Manufacturer shall supply a 2 year warranty on all hardware and software. A limited 10 year warranty shall be provided on the standard relay card.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install equipment level and plumb and according to manufacturer's written instructions.

### 3.2 CONTROL WIRING INSTALLATION

- A. Install wiring between sensing and control devices according to manufacturer's written instructions.
- B. Wiring Method: Install all wiring in raceways.
- C. Bundle, train, and support wiring in enclosures.
- D. Ground equipment.
- E. Connections: Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values.

### 3.3 IDENTIFICATION

- A. Provide Brady wire markers or equivalent on all conductors.

### 3.4 FIELD QUALITY CONTROL

- A. Inspect control components for defects and physical damage.
- B. Verify settings of photoelectric devices with photometer.
- C. Electrical Tests: Use particular caution when testing devices containing solid-state components. Perform the following according to manufacturer's written instructions:
  - 1. Continuity tests of circuits.
  - 2. Operational Tests: Set and operate devices to demonstrate their functions and capabilities in a methodical sequence that cues and reproduces actual operating functions.
- D. Correct deficiencies, make necessary adjustments, and retest. Verify that specified requirements are met.

### 3.5 CLEANING

- A. Cleaning: Clean equipment and devices internally and externally using methods and materials recommended by manufacturers, and repair damaged finishes.

END OF SECTION 16145

## SECTION 16511 - INTERIOR LIGHTING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes interior lighting fixtures, lighting fixtures mounted on exterior building surfaces and recessed in canopies, lamps, ballasts, emergency lighting units, and accessories.
- B. Related Sections include the following:
  - 1. Section 16145 Lighting Control Devices.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of lighting fixture indicated, arranged in order of fixture designation. Include data on features and accessories.
- B. Maintenance data for lighting fixtures.
- C. Emergency lighting units including battery and charger.

#### 1.4 QUALITY ASSURANCE

- A. Fixtures, Emergency Lighting Units, and Accessories: Listed and labeled as defined in the NEC, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- B. Comply with the NEC.
- C. FM Compliance: Fixtures for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM.
- D. NFPA 101 Compliance: Comply with visibility and luminance requirements for exit signs.

#### 1.5 COORDINATION

- A. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, partition assemblies, and other construction.

#### 1.6 WARRANTY

- A. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period for Emergency Lighting Unit Batteries: Five years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining four years.
- B. Special Warranty for Ballasts: Manufacturer's standard form in which ballast manufacturer agrees to repair or replace ballasts that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period for Electronic Ballasts: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Products: As indicated on the drawings.

### 2.2 FIXTURES AND FIXTURE COMPONENTS, GENERAL

- A. Metal Parts: Free from burrs, sharp corners, and edges.
- B. Sheet Metal Components: Steel, unless otherwise indicated. Form and support to prevent warping and sagging.
- C. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position..
- D. Lenses, Diffusers, Covers, and Globes: 100 percent virgin acrylic plastic or annealed crystal glass, unless otherwise indicated.
  - 1. Plastic: High resistance to yellowing and other changes due to aging, exposure to heat, and ultraviolet radiation.
  - 2. Lens Thickness: 0.125 inch minimum, unless greater thickness is indicated.

### 2.3 FLUORESCENT LAMP BALLASTS

- A. General Requirements: Unless otherwise indicated, features include the following:
  - 1. Designed for type and quantity of lamps indicated at full light output.
  - 2. Total Harmonic Distortion Rating: Less than 10 percent.
  - 3. Sound Rating: A.
- B. Electronic Ballasts for Linear Lamps: Unless otherwise indicated, features include the following, besides those in "General Requirements" Paragraph above:
  - 1. Certified Ballast Manufacturer Certification: Indicated by label.

2. Parallel Lamp Circuits: Multiple lamp ballasts connected to maintain full light output on surviving lamps if one or more lamps fail.
- C. Electromagnetic Ballasts for Linear Lamps: Unless otherwise indicated, features include the following, besides those in "General Requirements" Paragraph above:
1. Type: Energy saving.
  2. Certified Ballast Manufacturer Certification: Indicated by label.
- D. Ballasts for Compact Lamps: Electronic programmed start type, complying with ANSI C 82.11, designed for type and quantity of lamps indicated. Ballast shall be designed for full light output unless dimmer or bi-level control is indicated:
1. Lamp end-of-life detection and shutdown circuit.
  2. Automatic lamp starting after lamp replacement.
  3. Sound Rating: A.
  4. Total Harmonic Distortion Rating: Less than 20 percent.
  5. Transient Voltage Protection: IEEE C62.41, Category A or better.
  6. Operating Frequency: 20 kHz or higher.
  7. Lamp Current Crest Factor: 1.7 or less.
  8. BF: 0.95 or higher, unless otherwise indicated.
  9. Power Factor: 0.95 or higher.
  10. Interference: Comply with 47 CFR, Chapter 1, Part 18, Subpart C, for limitations on electromagnetic and radio-frequency interference for nonconsumer equipment.
  11. Ballast Case Temperature: 75 deg C, maximum.
- G. Ballasts for Low-Temperature Environments: As follows:
1. Temperatures 0 Deg F (Minus 17 Deg C) and Higher: Electronic type rated for 0 deg F (minus 17 deg C) starting and operating temperature with indicated lamp types.
  2. Temperatures Minus 20 Deg F (Minus 29 Deg C) and Higher: Electromagnetic type designed for use with indicated lamp types.

## 2.5 EMERGENCY LIGHTING UNITS

- A. Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within lighting fixture body and compatible with ballast. Comply with UL 924.
1. Emergency Connection: Operate 1 fluorescent lamp continuously at an output of 1100 lumens for 90 minutes. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
  2. Test Push Button and Indicator Light: Visible and accessible without opening fixture or entering ceiling space. Provide integral to fixture or mounted adjacent to fixture.
    - a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    - b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
  3. Battery: Sealed, maintenance-free, nickel-cadmium type.
  4. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
  5. Battery: Sealed, maintenance-free, nickel-cadmium type.
  6. Charger: Fully automatic, solid-state type with sealed transfer relay.
  7. Night-Light Connection: Where night-light option is called out in the drawings, operate one fluorescent lamp continuously.
- B. External Type: Self-contained, modular, battery-inverter unit, suitable for powering one or more fluorescent lamps, remote mounted from lighting fixture. Comply with UL 924.

1. Emergency Connection: Operate 1 or 2 fluorescent lamps continuously at an output of 1100 lumens for 90 minutes. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
  2. Battery: Sealed, maintenance-free, nickel-cadmium type.
  3. Charger: Fully automatic, solid-state, constant-current type.
  4. Housing: NEMA 250, Type 1 enclosure.
  5. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
  6. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
- C. Cold weather Compact Fluorescent: Self-contained, modular, battery-inverter unit, suitable for powering one or more fluorescent lamps, integral or remote mounted from lighting fixture. Comply with UL 924.
1. Emergency Connection: Operate 1 or two fluorescent lamps continuously at a minimum output of 1100 lumens for 90 minutes. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
  2. Battery: Sealed, maintenance-free, nickel-cadmium type.
  3. Charger: Fully automatic, solid-state, constant-current type.
  4. Housing: NEMA 250, Type 1 enclosure for remote-mounted.
  5. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
  6. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
  7. Operating Temperature Range: -20° C to +55° C (-4° F to +131° F)
  8. Ballasts shall be equivalent to or exceed performance as follows:
    - a. Outdoor Compact Fluorescent Fixtures: Bodine B4CF1 or B4CF2
    - b. Outdoor Linear Fluorescent Fixtures: Bodine B50 Cold-Pak

## 2.7 LAMPS

- A. Fluorescent Color Temperature and Minimum Color-Rendering Index: 3500 K and 78 CRI, unless otherwise indicated.
- B. Non-compact fluorescent Lamp Life: Minimum rated average is 20,000 hours at 3 hours per start.
- C. Compact fluorescent Lamp Life: Minimum rated average is 12,000 hours at 3 hours per start.
- D. Metal-Halide Color Temperature and Minimum Color-Rendering Index: 3700 K and 65 CRI, unless otherwise indicated.
- E. Horizontally mounted Metal-Halide lamps shall be Venture Lamps series H-75 lamps.

## 2.8 FIXTURE SUPPORT COMPONENTS

- A. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fitting and ceiling canopy. Finish same as fixture.
- B. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy arranged to mount a single fixture. Finish same as fixture.
- C. Rod Hangers: 3/16-inch- minimum diameter, cadmium-plated, threaded steel rod.
- D. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

- E. Aircraft Cable Support: Use cable, anchorages, and intermediate supports recommended by fixture manufacturer.
- F. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm)

## 2.9 FINISHES

- A. Fixtures: Manufacturer's standard, unless otherwise indicated.
  - 1. Paint Finish: Applied over corrosion-resistant treatment or primer, free of defects.
  - 2. Metallic Finish: Corrosion resistant.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Fixtures: Set level, plumb, and square with ceiling and walls, and secure according to manufacturer's written instructions and approved submittal materials. Install lamps in each fixture.
- B. Furnish and install a protective barrier around fixtures that are not insulation-contact-rated (non-IC-rated) in locations where insulation is installed. The protective barrier shall be installed to yield a 4" air-gap from the fixture on all sides and top.
- C. Support for Fixtures in or on Grid-Type Suspended Ceilings: Attach supports to building structure.
  - 1. Install a minimum of four ceiling support system rods or wires for each fixture. Locate not more than 6 inches from fixture corners.
  - 2. Support Clips: Fasten to fixtures and to ceiling grid members at or near each fixture corner.
  - 3. Fixtures of Sizes Less Than Ceiling Grid: Arrange as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch metal channels spanning and secured to ceiling tees.
- D. Suspended Fixture Support: As follows:
  - 1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
  - 2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
  - 3. Continuous Rows: Suspend from cable installed according to fixture manufacturer's written instructions and details on Drawings.

### 3.2 CONNECTIONS

- A. Ground equipment.
  - 1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values.

### 3.3 FIELD QUALITY CONTROL

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Tests: As follows:
  - 1. Verify normal operation of each fixture after installation.
  - 2. Emergency Lighting: Interrupt electrical supply to demonstrate proper operation.
- C. Malfunctioning Fixtures and Components: Replace or repair, then retest. Repeat procedure until units operate properly.
- D. Ballasts: Replace all noisy ballasts. Ballasts that can be heard shall be considered noisy. Repeat the procedure until a ballast is installed that is not noisy.

#### 3.4 CLEANING AND ADJUSTING

- A. Clean fixtures internally and externally after installation. Use methods and materials recommended by manufacturer.
- B. Adjust aimable fixtures to provide required light intensities.

END OF SECTION 16511

## SECTION 16800 – ELECTRICAL DEMOLITION AND REPAIR

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes electrical demolition and repair. Work includes removal of obsolete wiring and electrical apparatus; relocation, reconnection or replacement of existing wiring affected by demolition or new construction; capping off concealed wiring abandoned due to demolition or new construction.

### PART 2 - PRODUCTS

#### 2.1 EQUIPMENT

- A. Conductors and Cables: Refer to Section 16120 – Conductors and Cables.
- B. Raceways and Boxes: Refer to Section 16130 – Raceways and Boxes.

### PART 3 - EXECUTION

#### 3.1 DEMOLITION

- A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the work, remove damaged portions and install new products of equal capacity, quality, and functionality.
- B. Accessible Work: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety. Completely remove all exposed traces, hardware, wiring and conduit systems to the source. All knockouts and holes shall be patched or plugged.
- C. Contractor shall re-use existing straight conduit runs and factory bends for conduits 2" and larger, provided that they are not damaged in any way and are installed in accordance with Section 16130.
- D. Re-use of all other electrical apparatus and material is subject to approval by owner.
- E. Abandoned Work: Cut and remove buried raceway and wiring, indicated to be abandoned in place, 2 inches below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.
- F. Remove demolished material for recycling as directed by owner.
- G. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

- H. Power outages shall be held to a minimum and coordinated with the owner. Contractor shall schedule outages during off-hours.

END OF SECTION 16800

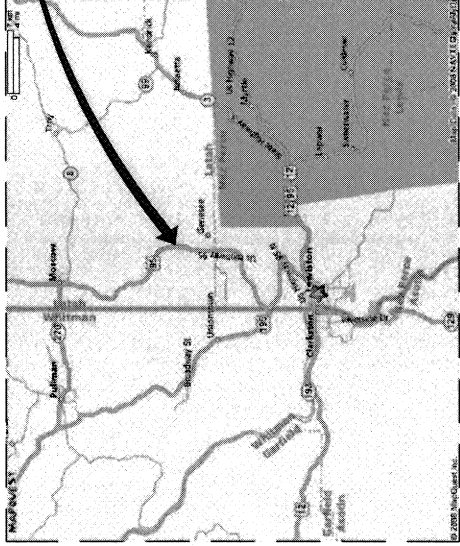
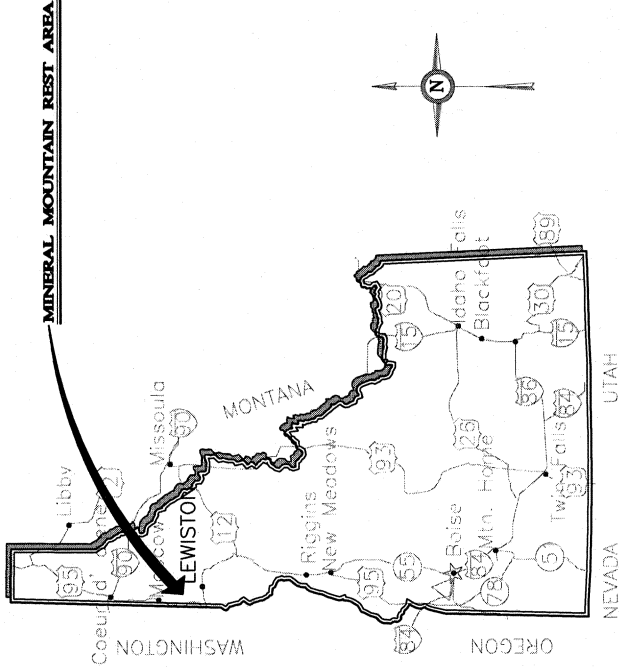
# STATE OF IDAHO

## TRANSPORTATION DEPARTMENT

### DIVISION OF HIGHWAYS

#### MINERAL MOUNTAIN REST AREA

#### UPGRADES



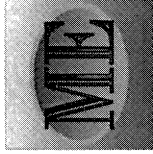
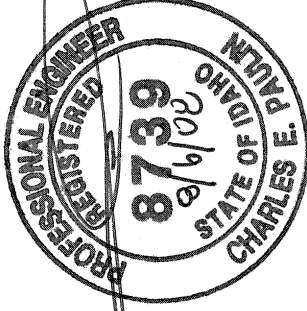
#### INDEX OF DRAWINGS

SHEET	DESCRIPTION
A0	Cover Sheet
A1	Project Information / Site / Elevation Plan
A2	Demolition / Floor Plan / Details
A3	Interior Elevations
MG1	Mechanical General Sheet
	AC Floor Plan
M2	HVAC Schedules
M3	Waste and Vent Floor Plan
P1	Water Piping Floor Plan
P2	Plumbing Schedules and Details
P3	Electrical Cover Sheet
E0	One-Line Diagram / Electrical Schedules / Details
E1	Electrical Floor Plans
E2	



#### Partial Vicinity Map

no scale



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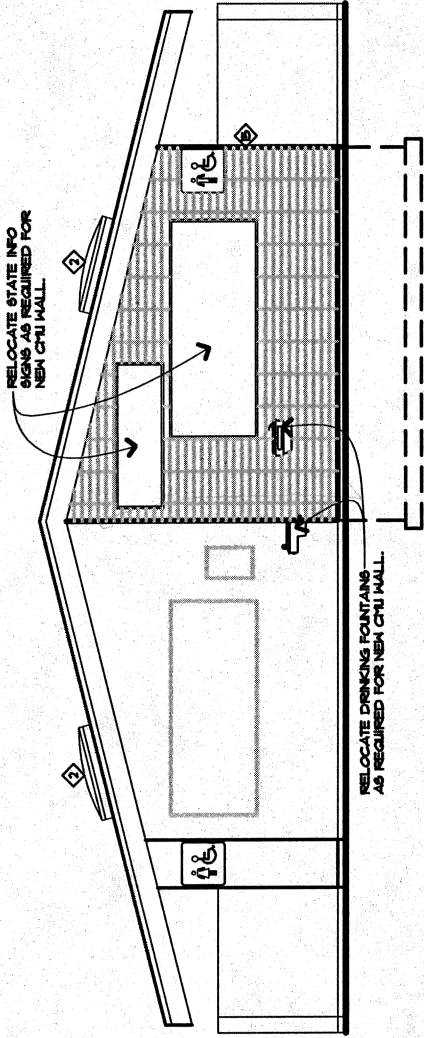
MINERAL MOUNTAIN REST AREA

STATE OF IDAHO  
TRANSPORTATION DEPARTMENT  
DIVISION OF HIGHWAYS

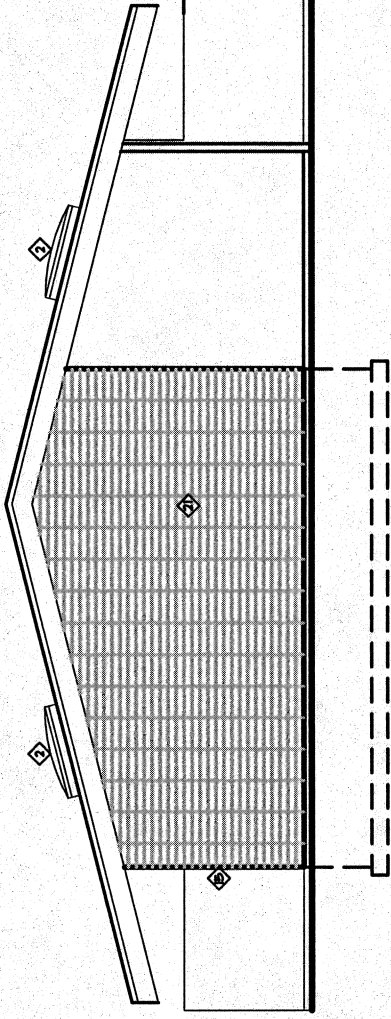
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APPROVED

TRUE NORTH



FRONT ELEVATION PLAN  
1/4" = 1' — 0"



BACK ELEVATION PLAN  
1/4" = 1' — 0"

**GENERAL PROJECT NOTES**

THIS OFFICE ASSUMES NO RESPONSIBILITY AS TO THE PHYSICAL CHARACTERISTICS OF THE SOIL, NOR DOES THIS OFFICE VERIFY THE ACCURACY OF THE ENGINEERING DATA SUPPLIED BY OTHERS.

ALL CONSTRUCTION TO CONFORM TO THE 2006 EDITION OF THE I.B.C. & ALL OTHER APPLICABLE CODES & REGULATIONS.

DRAWINGS ARE IN PART DIAGNOSTIC & DO NOT NECESSARILY SHOW ALL CONSTRUCTION METHODS & MATERIALS.

THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS & EXISTING CONDITIONS BEFORE PROCEEDING WITH ORDERING OR INSTALLATION OF MATERIALS OR MANUFACTURED PRODUCTS.

ANY CLARIFICATION OR DISCREPANCIES MUST BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. WORK DONE WITHOUT THE APPROVAL OF THE ARCHITECT/OWNER, WHICH IS FOUND TO BE UNACCEPTABLE, SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

**PROJECT DATA**

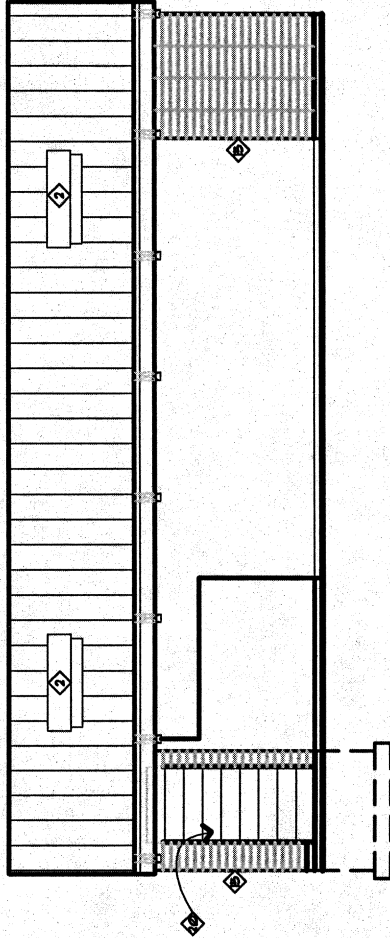
PROJECT ADDRESS: MINERAL MOUNTAIN REST AREA  
OWNER: IDAHO TRANSPORTATION DEPARTMENT

**DRAWING INDEX**

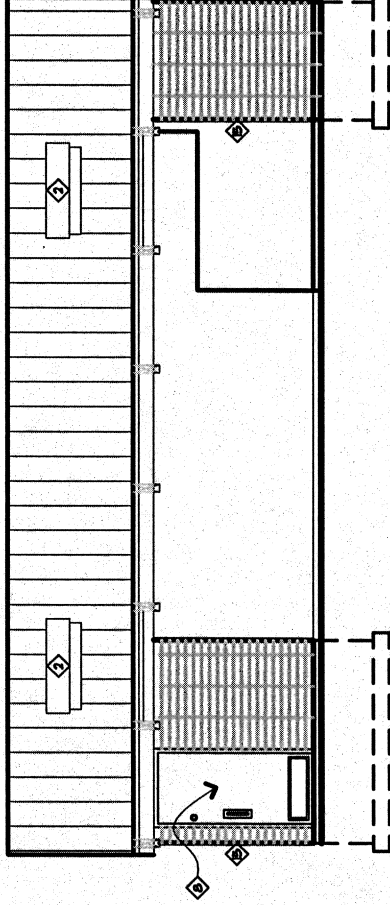
- A1 PROJECT INFO / ELEVATION
- A2 DEMO / FLOOR / DETAIL PLAN
- A3 BATHROOM INTERIOR ELEVATIONS

**DESIGN LOADS**

ROOF SNOW LOAD 40 PSF  
FLOOR LIVE LOAD 60 PSF  
WIND EXPOSURE B 90 MPH 3 SEC. GUST  
78 MPH FASTEST MILE SITE CLASS D  
ROOF DEAD LOAD 20 PSF  
FLOOR DEAD LOAD 20 PSF  
SEISMIC CATEGORY B



LEFT ELEVATION  
1/4" = 1' — 0"



RIGHT ELEVATION  
1/4" = 1' — 0"

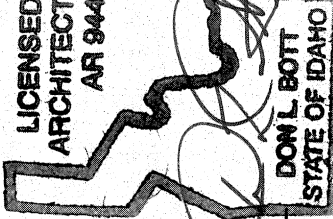
**Bott & Associates**  
ARCHITECTS

PROJECT INFO. / ELE. PLAN

STATE OF IDAHO  
TRANSPORTATION DEPARTMENT  
DIVISION OF HIGHWAYS

DRAWN: MS  
DATE: 08/05/08  
CHECKED: DB MR  
JOB NO.: 080204  
SHEET: A1

APPROVED





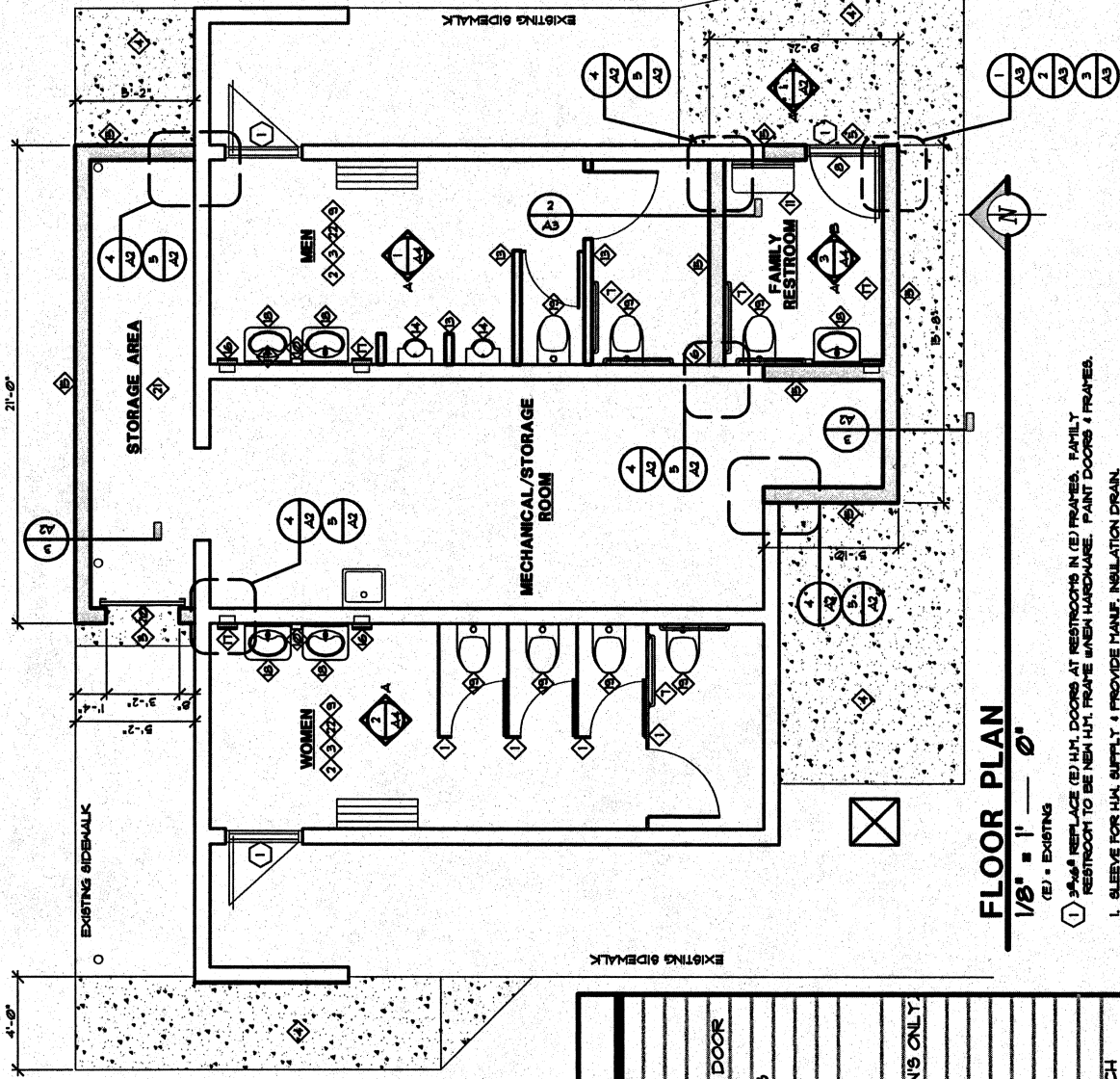
NO.	REVISIONS	DATE

STATE OF IDAHO  
TRANSPORTATION DEPARTMENT  
DIVISION OF HIGHWAYS

DRAWN	MS
DATE	08/05/08
CHECKED	DB MR
JOB NO.	080204
SHEET	

A2

APPROVED

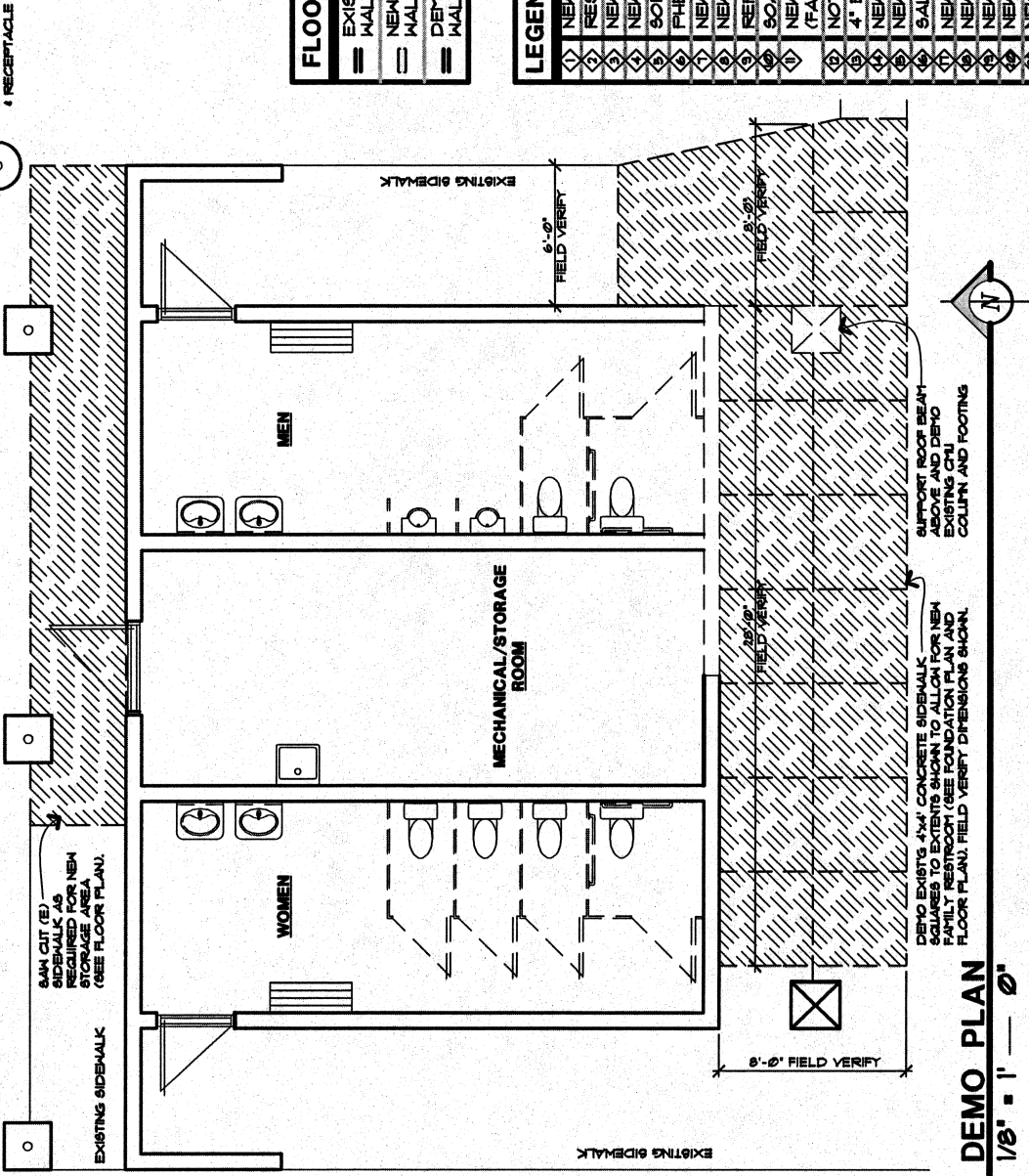


FLOOR PLAN  
1/8" = 1' - 0"

- (E) = EXISTING
1. 3/4" x 4" REPLACE (E) H.H. DOORS AT RESTROOMS IN (E) FRAMES. FAMILY RESTROOM TO BE NEW H.H. FRAME. MEN'S H.W.C. FRAME. PAINT DOORS & FRAMES.
  1. SLEEVE FOR H.H. SUPPLY & PROVIDE MANUF. INSULATION DRAIN.
  2. REUSE ALL RESTROOM ACCESSORIES.
  3. INSTALL NEW REST ROOM FIXTURES. SEE SHEETS PS & PS.
  4. COORDINATE CLEARANCE FOR PHENOLIC AROUND MIRRORS & PARTITIONS.
  5. FLOOR TILE IN RESTROOM TO BE PATCHED/REPLACED AT TOILET PARTITIONS & DRAIN.

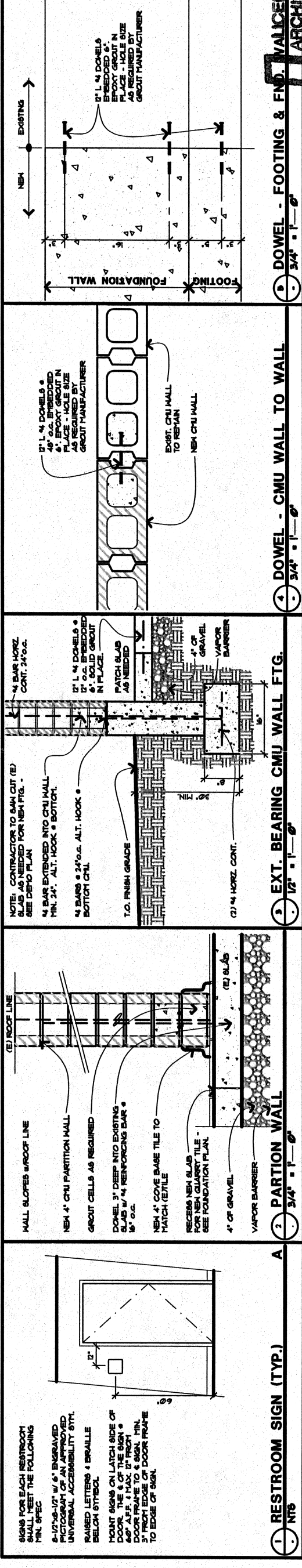
FLOOR PLAN LEGEND	
EXISTING WALL	EXISTING DOOR
NEW WALL	NEW DOOR
DEMO WALL	DEMO DOOR

LEGEND	
NEW TOILET PARTITIONS	
RESEAL SKYLIGHTS	
NEW MIRRORS	
NEW SIDEWALK	
SOLDER COURSE BOND BEAT ABOVE NEW DOOR	
PHENOLIC PANEL - MECHANICALLY FASTEN	
NEW GRAB BARS, MEET ADA REQUIREMENTS	
NEW EXT. DOOR (FAMILY RESTROOM)	
REPAINT/PAINT ALL - (CONTRACTOR)	
SOAP DISPENSER	
NEW FIXED DIAPER CHANGING STATION (FAMILY RESTROOM ONLY)	
NOT USED	
4" BRICK PARTITION WALL - STACK BOND (MEN'S ONLY)	
NEW URINAL	
NEW CHU WALL - STACK BOND	
SALVAGED HAND DRYER, REINSTALL	
NEW HAND DRYER	
NEW SINK	
NEW TOILET	
NEW 3'-0" x 1'-0" ROLL UP DOOR w/LOOK	
NEW CHU STORAGE AREA	
INSTALL TOILET PAPER DISPENSERS AT EACH WATERCLOSET. REUSE SALVAGED DISPENSERS AND PROVIDE OTHER NEW ACCESSORIES TO MATCH EXISTING AS REQUIRED	



DEMO PLAN  
1/8" = 1' - 0"

- (E) = EXISTING
1. DASHED LINES INDICATE DEMO
  2. DEMO REST ROOM FIXTURES, SEE SHEET PL
  3. REMOVE RESTROOM SIGNAGE.
  4. REMOVE GRAB BARS.
  5. REMOVE & PROTECT RESTROOM ACCESSORIES.
  6. REMOVE REST ROOM DOORS - FRAMES TO REMAIN.



RESTROOM SIGN (TYP.)  
A

PARTITION WALL  
3/4" = 1' - 0"

EXT. BEARING CMU WALL FTG.  
1/2" = 1' - 0"

DOWEL - CMU WALL TO WALL  
3/4" = 1' - 0"

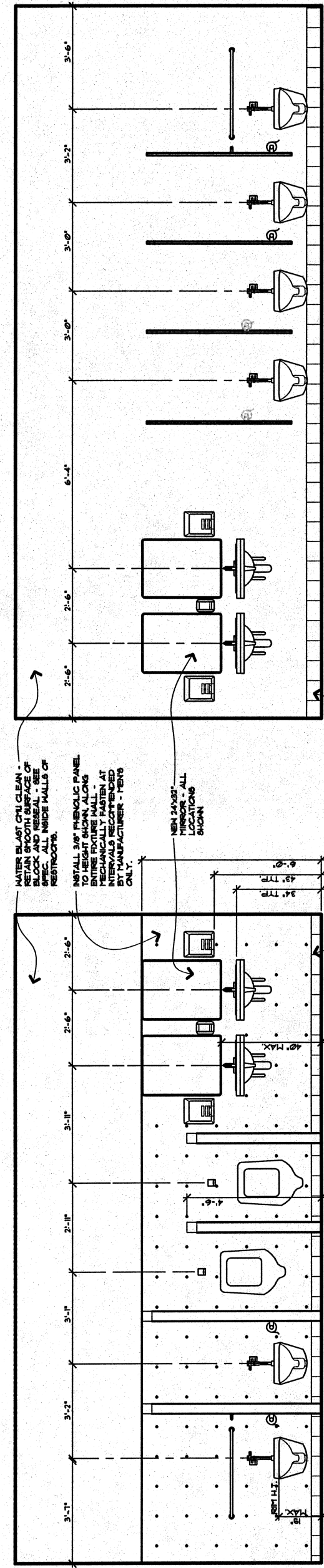
DOWEL - FOOTING & FND. WALL  
3/4" = 1' - 0"

AR 84

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ARCHITECTS

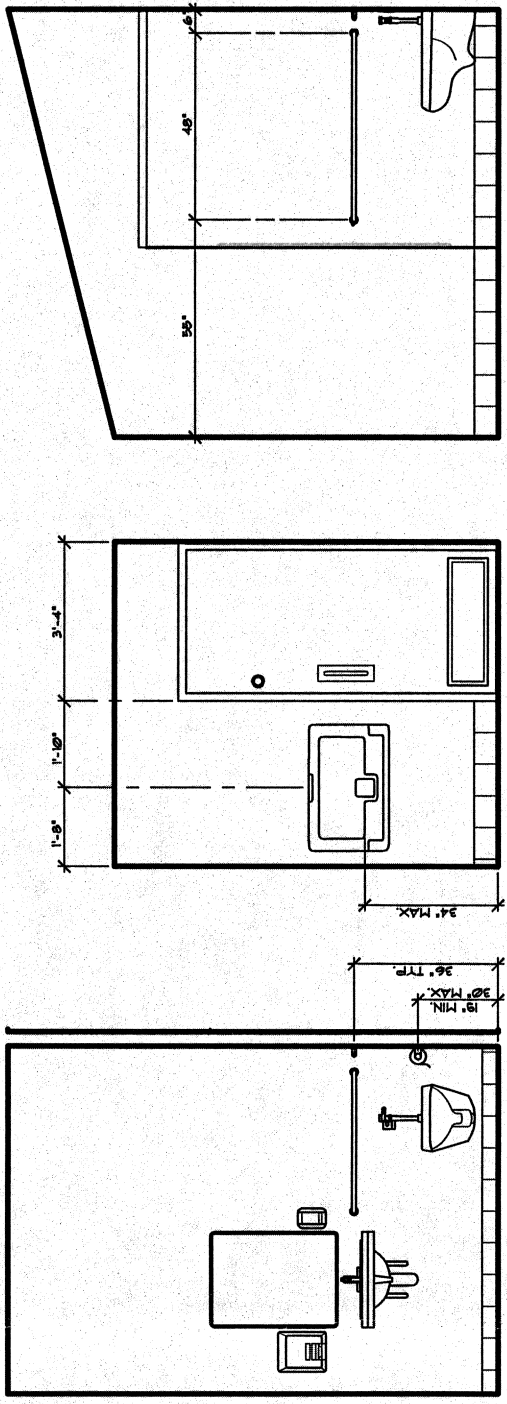
DEMO PLAN / FLOOR PLAN / DETAILS

DON L. BOTT



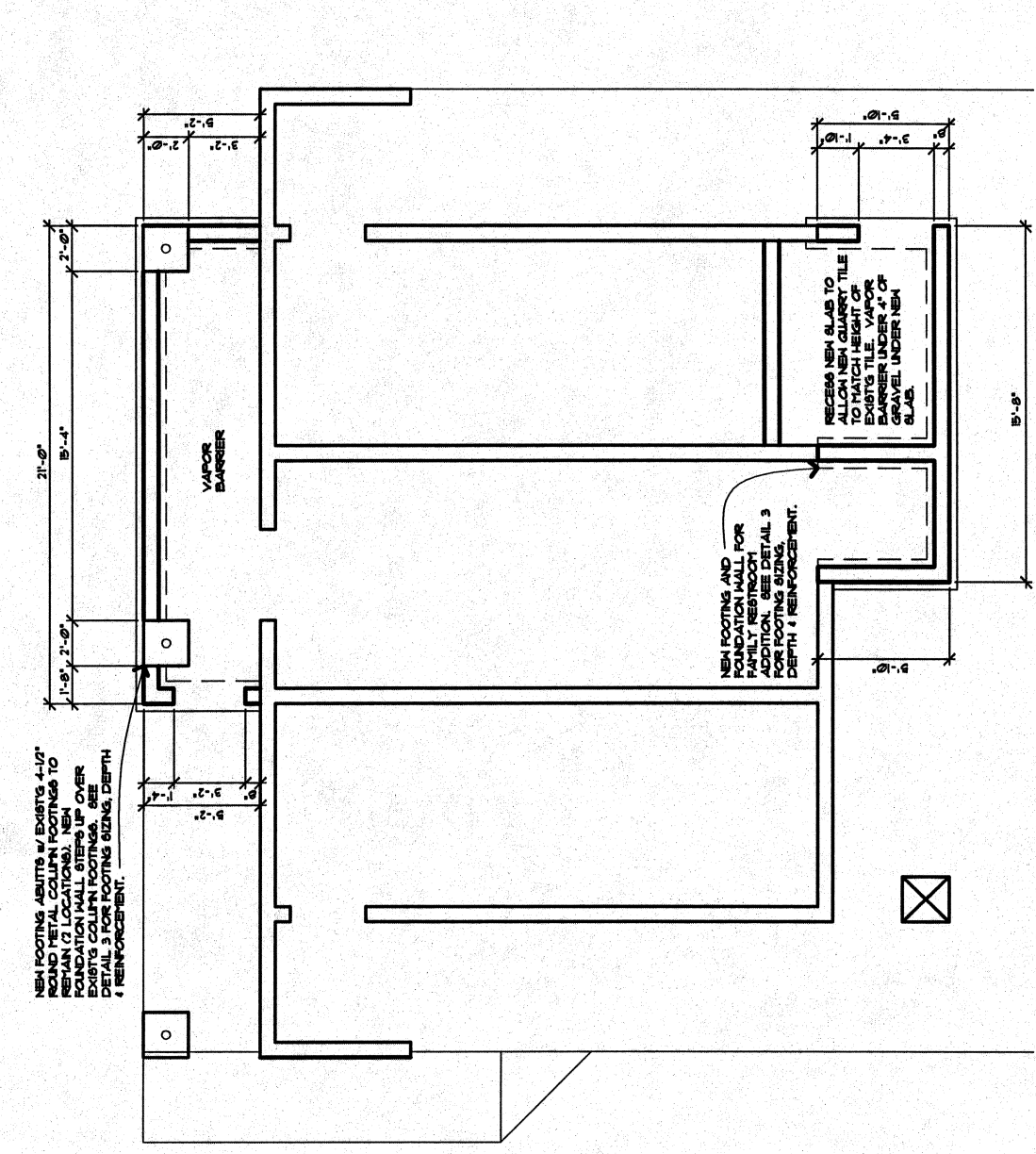
1 MEN'S RESTROOM 1/4" = 1' - 0"

2 WOMEN'S RESTROOM 1/4" = 1' - 0"

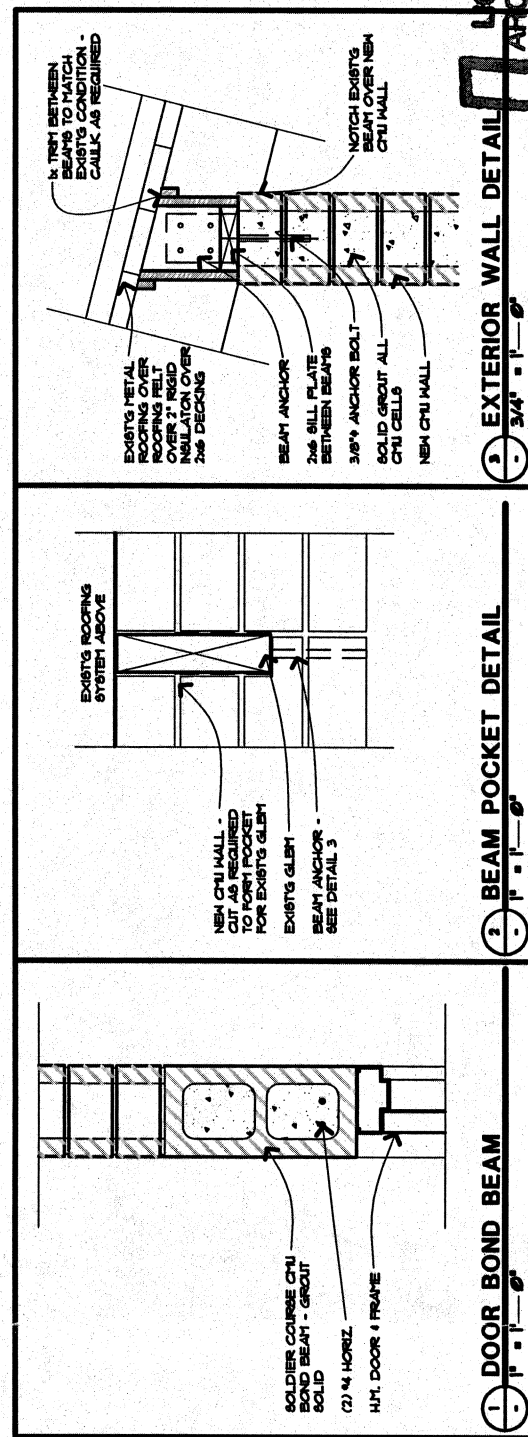


3 FAMILY BATHROOM 1/4" = 1' - 0"

4 ADA TOILET STALL 1/4" = 1' - 0"



FOUNDATION PLAN 1/8" = 1' - 0"



1 EXTERIOR WALL DETAIL 3/4" = 1' - 0"

2 BEAM POCKET DETAIL 1/4" = 1' - 0"

3 DOOR BOND BEAM 1/4" = 1' - 0"

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ARCHITECTS

INTERIOR ELEVATIONS / FOUNDATION PLAN / DETAILS



LICENSED ARCHITECT A3  
AR APPROVED

DON L. BOTT  
STATE OF IDAHO

MECHANICAL ABBREVIATIONS			
TEXT	TERM	TEXT	TERM
A/C or AC	AIR CONDITIONING	IFGC	INTERNATIONAL FUEL GAS CODE
AFF	ABOVE FINISHED FLOOR	IMC	INTERNATIONAL MECHANICAL CODE
AHU	AIR HANDLING UNIT	IPC	INTERNATIONAL PLUMBING CODE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR CONDITIONING ENGINEERS	KW	KILOWATT
BTU	BRITISH THERMAL UNITS	KWH	KILOWATT HOUR
BTUH	BTU'S PER HOUR	LAT	LEAVING AIR TEMPERATURE
CA	COMBUSTION AIR	LAV	LAVATORY
CC	COOLING COIL	LWT	LEAVING WATER TEMPERATURE
CFM	AIR FLOW RATE (CUBIC FEET PER MINUTE)	MAX	MAXIMUM
CWR	CHILLED WATER RETURN	MCA	MINIMUM CIRCUIT AMPS
CWS	CHILLED WATER SUPPLY	MOCP	MAXIMUM OVERCURRENT PROTECTION
CLG	CEILING	MIN	MINIMUM
CW	COLD WATER	NC	NOISE CRITERIA
DEG or °	DEGREE	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
DIA	DIAMETER	NTS	NOT TO SCALE
DB	DRY BULB TEMPERATURE	OSA	OUTSIDE AIR
EA	EXHAUST AIR	PD	PRESSURE DROP
EAT	ENTERING AIR TEMPERATURE	PH or ø	PHASE
EER	ENERGY EFFICIENCY RATIO	PRV	PRESSURE REDUCING VALVE
ESP	EXTERNAL STATIC PRESSURE	RA	RETURN AIR
EWT	ENTERING WATER TEMPERATURE	RPM	REVOLUTIONS PER MINUTE
FCO	FLOOR CLEANOUT	RTU	ROOFTOP UNIT
FD	FIRE DAMPER	SA	SUPPLY AIR
FLA	FULL LOAD AMPS	SEER	SEASONAL ENERGY EFFICIENCY RATIO
FLR	FLOOR	SFD	COMBINATION SMOKE/FIRE DAMPER
FFM	FEET PER MINUTE	SP	STATIC PRESSURE
FT	FEET	SYM	SYMBOL
GA	GAUGE	T & P	TEMPERATURE AND PRESSURE
GCO	GRADE CLEANOUT	TEMP	TEMPERATURE
GPM	WATER FLOW RATE (GALLONS PER MINUTE)	TYP	TYPICAL
HC	HEATING COIL	UPC	UNIFORM PLUMBING CODE
HP	HORSE POWER	URL	URNAL
HVAC	HEATING, VENTILATING, AIR CONDITIONING	VTR	VENT THRU ROOF
HW	HOT WATER	V	VOLTS
HWR	HOT WATER RETURN	W/	WITH
HWS	HOT WATER SUPPLY	WB	WET-BULB
IBC	INTERNATIONAL BUILDING CODE	WC	WATER CLOSET
IEEC	INTERNATIONAL ENERGY CONSERVATION CODE	WCO	WALL CLEANOUT
IFC	INTERNATIONAL FIRE CODE	WH	WATER HEATER

NOTE: THIS IS A STANDARD LIST OF COMMONLY USED MECHANICAL ABBREVIATIONS. SOME OF THE ABBREVIATIONS SHOWN ABOVE MAY NOT BE USED IN THIS DRAWING PACKAGE.

MECHANICAL AND PLUMBING DRAWING LEGEND			
RE: ALL HVAC AND PLUMBING SHEETS			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLEXIBLE DUCTWORK		REDUCED PRESSURE BACKFLOW PREVENTER
	DUCTWORK		DOUBLE CHECK BACKFLOW PREVENTER
	UNED DUCTWORK		BALL VALVE
	DUCTWORK BREAK		BUTTERFLY VALVE
	DUCTWORK OR PIPING RISE		GATE VALVE
	CONCENTRIC SQUARE TO ROUND TRANSITION		PRESSURE REDUCING VALVE
	MOTORIZED DAMPER		BALANCE VALVE
	MANUAL VOLUME DAMPER		CHECK VALVE
	SPIN-IN FITTING W/AIR EXTRACTOR AND HAND DAMPER		GLOBE VALVE
	HIGH EFFICIENCY FITTING W/ HAND DAMPER		TRIPLE DUTY VALVE
	SWITCH		THREE WAY CONTROL VALVE
	THERMOSTAT		TWO WAY CONTROL VALVE
	HUMIDISTAT		GAS PRESSURE REGULATOR W/GAS COCK
	TEMPERATURE SENSOR		PRESSURE RELIEF VALVE
	CARBON DIOXIDE SENSOR		WATER HAMMER ARRESTOR
	CARBON MONOXIDE SENSOR		STORM DRAIN
	NITROUS OXIDE SENSOR		ROOF DRAIN LINE
	DUCT SMOKE DETECTOR		OVERFLOW DRAIN LINE
	COMBINATION SMOKE/FIRE DAMPER		SOIL, WASTE, OR SANITARY SEWER
	FIRE DAMPER		VENT
	SMOKE DAMPER		ACID WASTE
	EQUIPMENT CALLOUT		ACID VENT
	TURNING VANES		CONDENSER WATER SUPPLY
	INTAKE OR EXHAUST		CONDENSER WATER RETURN
	DIRECTION OF AIRFLOW		CONDENSATE DRAIN LINE
	SUPPLY DIFFUSER		DOMESTIC COLD WATER (CW)
	RETURN GRILLE		DOMESTIC HOT WATER (HW)
	EXHAUST GRILLE		DOMESTIC HOT WATER RETURN (HWR)
	FLOOR GRILLE		MEDIUM PRESSURE NATURAL GAS
	CEILING EXHAUST FAN		LOW PRESSURE NATURAL GAS
	FLOW DIRECTION		FIRE SPRINKLER LINE
	TEMPERATURE GAUGE		GEO THERMAL WATER SUPPLY
	PRESSURE GAUGE (LIQUID FILLED W/ ISOLATION VALVE)		GEO THERMAL WATER RETURN
	TEMPERATURE SENSOR (DUCT OR PIPING)		CHILLED WATER SUPPLY
	FLOW SWITCH		CHILLED WATER RETURN
	STAINLESS STEEL BRAIDED FLEX CONNECTION		HEATING WATER SUPPLY
	ELASTOMERIC FLEX CONNECTOR		HEATING WATER RETURN
	SUCTION DIFFUSER		LIQUID REFRIGERANT LINE
	Y TYPE STRAINER (ALL 1 1/2" OR LARGER SHALL BE PROVIDED W/BLOW DOWN VALVE)		SUCTION REFRIGERANT LINE
	REDUCER		SLOPE PIPE IN DIRECTION OF ARROW
	UNION		NEW TO EXISTING CONNECTION POINT
	AIR VENT		PIPE ANCHOR
	FLOOR CLEANOUT		PIPE GUIDE
	WALL CLEANOUT		CAP
	GRADE CLEANOUT		EXISTING
	FLOOR DRAIN		FUTURE
	FLOOR SINK		NEW

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MECHANICAL AND PLUMBING DRAWING LEGEND

RE: ALL HVAC AND PLUMBING SHEETS

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	SWITCH		THREE WAY CONTROL VALVE
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	HUMIDISTAT		GAS PRESSURE REGULATOR W/GAS COCK
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	FIRE DAMPER		VENT
	SMOKE DAMPER		ACID WASTE
	EQUIPMENT CALLOUT		ACID VENT
	TURNING VANES		CONDENSER WATER SUPPLY
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	DIRECTION OF AIRFLOW		CONDENSATE DRAIN LINE
	SUPPLY DIFFUSER		DOMESTIC COLD WATER (CW)
	RETURN GRILLE		DOMESTIC HOT WATER (HW)
	EXHAUST GRILLE		DOMESTIC HOT WATER RETURN (HWR)
	FLOOR GRILLE		MEDIUM PRESSURE NATURAL GAS
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	STAINLESS STEEL BRAIDED FLEX CONNECTION		HEATING WATER SUPPLY
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	UNION		NEW TO EXISTING CONNECTION POINT
	AIR VENT		PIPE ANCHOR
	FLOOR CLEANOUT		PIPE GUIDE
	WALL CLEANOUT		CAP
	GRADE CLEANOUT		EXISTING
	FLOOR DRAIN		FUTURE
	FLOOR SINK		NEW

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MECHANICAL AND PLUMBING DRAWING LEGEND

RE: ALL HVAC AND PLUMBING SHEETS

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MECHANICAL AND PLUMBING DRAWING LEGEND

RE: ALL HVAC AND PLUMBING SHEETS

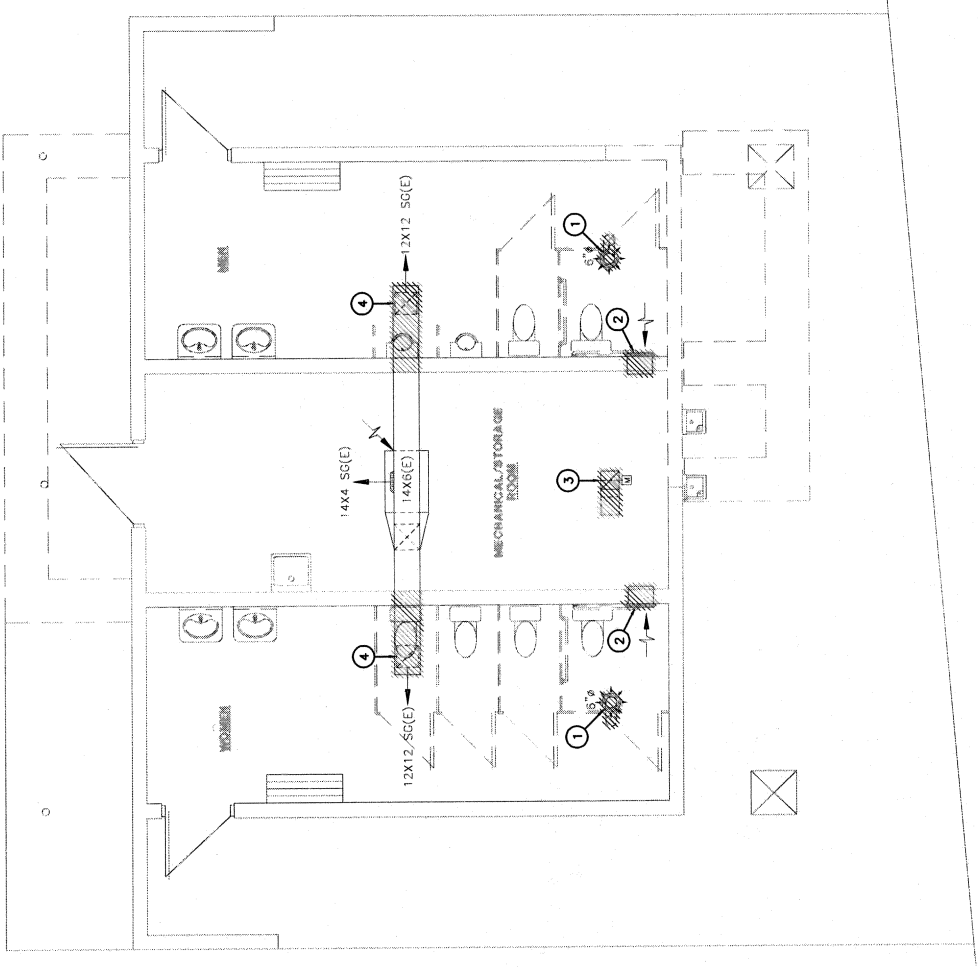
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RE: ALL HVAC AND PLUMBING SHEETS

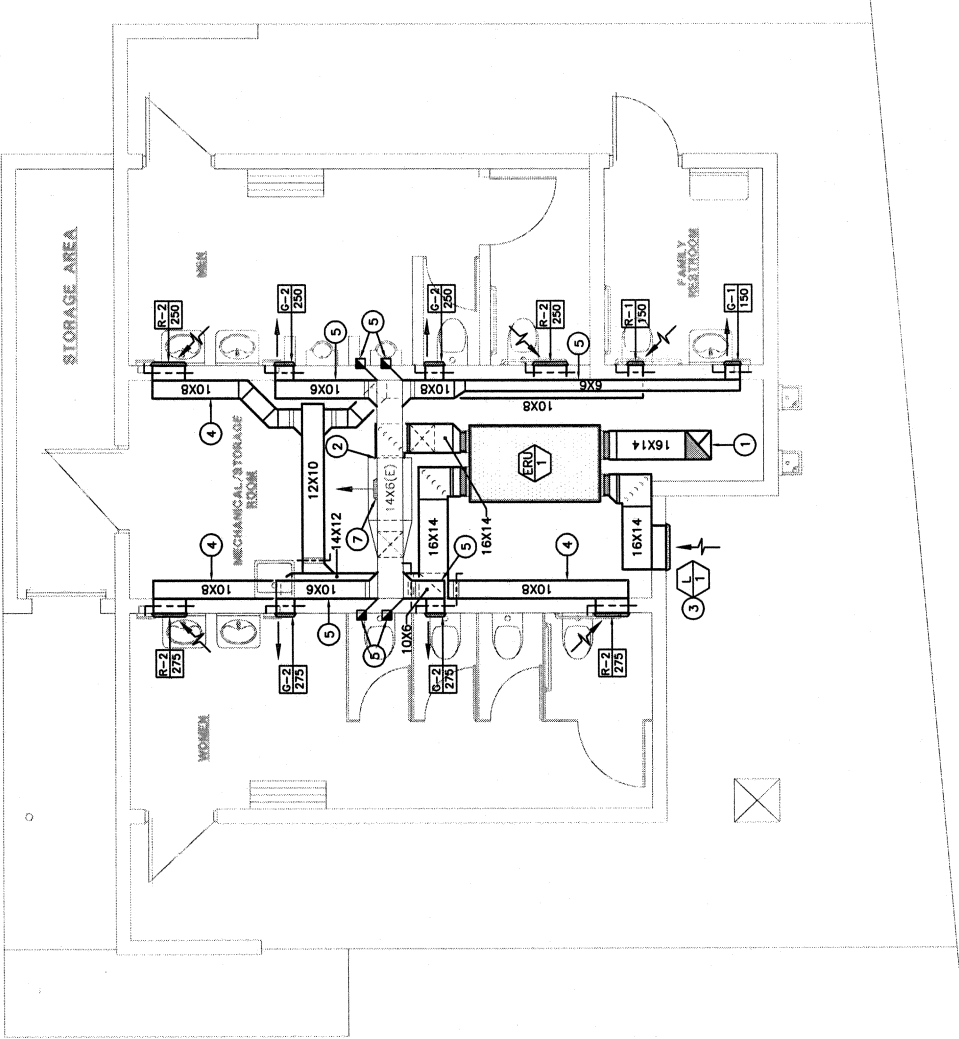
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	TEMPERATURE SENSOR		PRESSURE RELIEF VALVE
	CARBON DIOXIDE SENSOR		WATER HAMMER ARRESTOR
	CARBON MONOXIDE SENSOR		STORM DRAIN
	NITROUS OXIDE SENSOR		ROOF DRAIN LINE
	DUCT SMOKE DETECTOR		OVERFLOW DRAIN LINE
	COMBINATION SMOKE/FIRE DAMPER		SOIL, WASTE, OR SANITARY SEWER VENT
	FIRE DAMPER		ACID WASTE
	SMOKE DAMPER		ACID VENT
	EQUIPMENT CALLOUT		CONDENSER WATER SUPPLY
	TURNING VANES		CONDENSER WATER RETURN
	INTAKE OR EXHAUST		CONDENSATE DRAIN LINE
	DIRECTION OF AIRFLOW		DOMESTIC COLD WATER (CW)
	SUPPLY DIFFUSER		DOMESTIC HOT WATER (HW)
	RETURN GRILLE		DOMESTIC HOT WATER RETURN (HWR)
	EXHAUST GRILLE		MEDIUM PRESSURE NATURAL GAS
	FLOOR GRILLE		LOW PRESSURE NATURAL GAS
	Ceiling Exhaust Fan		FIRE SPRINKLER LINE
	FLOW DIRECTION		GEOTHERMAL WATER SUPPLY
	TEMPERATURE GAUGE		GEOTHERMAL WATER RETURN
	PRESSURE GAUGE (LIQUID FILLED W/ ISOLATION VALVE)		CHILLED WATER SUPPLY
	TEMPERATURE SENSOR (DUCT OR PIPING)		CHILLED WATER RETURN
	FLOW SWITCH		HEATING WATER SUPPLY
	STAINLESS STEEL BRAIDED FLEX CONNECTION		HEATING WATER RETURN
	ELASTOMERIC FLEX CONNECTOR		LIQUID REFRIGERANT LINE
	SUCTION DIFFUSER		SUCTION REFRIGERANT LINE
	Y TYPE STRAINER (ALL 1 1/2" OR LARGER SHALL BE PROVIDED W/BLOW DOWN VALVE)		SLOPE PIPE IN DIRECTION OF ARROW
	REDUCER		NEW TO EXISTING CONNECTION POINT
	UNION		PIPE ANCHOR
	AIR VENT		PIPE GUIDE
	FLOOR CLEANOUT		CAP
	WALL CLEANOUT		EXISTING
	GRADE CLEANOUT		FUTURE
	FLOOR DRAIN		NEW
	FLOOR SINK		



HVAC DEMOLITION FLOOR PLAN  
1/4" = 1' — 0"

DEMOLITION WORK KEYED NOTES:

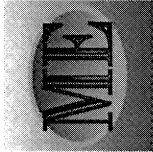
- SYMBOL USED FOR NOTE CALLOUT.
- 1. REMOVE EXISTING DIFFUSER AND ALL RELATED DUCTWORK SHOWN HATCHED. PATCH ROOF TO MATCH EXISTING.
- 2. REMOVE WALL RETURN GRILLE AND DUCTWORK SHOWN HATCHED. PATCH WALL TO MATCH EXISTING.
- 3. REMOVE EXISTING FRESH AIR DUCT AND MOTORIZED DAMPER SHOWN HATCHED. PATCH ROOF TO MATCH EXISTING
- 4. REMOVE EXISTING SUPPLY GRILL AND DUCTWORK SHOWN HATCHED.



HVAC NEW WORK FLOOR PLAN  
1/4" = 1' — 0"

NEW WORK KEYED NOTES:

- SYMBOL USED FOR NOTE CALLOUT.
- 1. 16X14 EXHAUST DUCT UP TO EXISTING ROOF PENETRATION AND INTAKE GOOSENECK, THIS AREA. OFFSET DUCT AT CEILING AS NECESSARY.
- 2. DROP 16X14 DUCT DOWN TO FLOOR AND CONNECT INTO RETURN SIDE OF EXISTING FURNACE.
- 3. LOCATE LOUVER AS HIGH AS POSSIBLE.
- 4. HOLD ALL DUCTWORK AS HIGH AS POSSIBLE. (TYPICAL)
- 5. SUPPLY DUCT MOUNTED ABOVE RETURN DUCT.
- 6. CONNECT NEW SUPPLY DUCT TO EXISTING SUPPLY DUCT.
- 7. REBALANCE EXITSING GRILLE TO 100 CFM.



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project number: 08-043



NO	REVISIONS	DATE

MINERAL MOUNTAIN REST AREA

STATE OF IDAHO  
TRANSPORTATION DEPARTMENT  
DIVISION OF HIGHWAYS

PLAT 24

DRAWN  
GPB  
DATE  
8/05/08  
CHECKED  
CEP  
JOB NO.  
080204  
SHEET

M1

APPROVED



ENERGY CODE COMPLIANCE NOTES

A. COMPLIANCE WITH THE 2006 INTERNATIONAL ENERGY CONSERVATION CODE IS REQUIRED FOR THIS PROJECT. THESE NOTES COVER MANDATORY REQUIREMENTS OF THE CODE. ADDITIONAL REQUIREMENTS ARE NOTED ON THE DRAWINGS AND IN THE SPECIFICATIONS.

B. MINIMUM REQUIREMENTS FOR SUPPLY AND RETURN DUCTWORK INSULATION:

1. R-5: DUCTS LOCATED IN UNCONDITIONED SPACES (SPACE NEITHER HEATED NOR COOLED SUCH AS ABOVE CEILING SPACES, WALL SPACES, DUCT CHASES, SOFFITS, ATTICS, CRAWL SPACES, UNHEATED BASEMENTS, AND UNHEATED GARAGES).

2. R-8: DUCTS LOCATED OUTSIDE OF THE BUILDING'S INSULATION ENVELOPE (SUCH AS ABOVE THE ATTIC INSULATION).

TYPICAL INSULATION THICKNESS REQUIRED TO MEET THESE REQUIREMENTS:

1. FIBERGLASS DUCT WRAP: R-5 (2"), R-8 (3").

2. FIBERGLASS DUCT LINER: R-5 (1 1/2"), R-8 (2").

C. CONTRACTOR SHALL VERIFY WITH THE MANUFACTURER, THE R-VALUES OF THE ACTUAL INSULATION USED. R-VALUES SHALL BE INSTALLED VALUES.

D. WHERE DUCTS USED FOR COOLING ARE EXTERNALLY INSULATED, THE INSULATION SHALL BE COVERED WITH A VAPOR RETARDER HAVING A MAXIMUM PERMEANCE OF 0.05 PERM OR ALUMINUM FOIL HAVING A MINIMUM THICKNESS OF 2 MILS. INSULATION HAVING A PERMEANCE OF 0.05 PERM OR ALUMINUM FOIL SHALL BE REQUIRED TO BE COVERED. ALL JOINTS AND SEAMS SHALL BE SEALED TO MAINTAIN THE CONTINUITY OF THE VAPOR RETARDER.

E. ALL DUCT JOINTS, SEAMS, AND CONNECTIONS SHALL BE FASTENED AND SEALED WITH WELDS, GASKETS, ADHESIVES, MASTIC-PLUS-EMBEDDED-FABRIC SYSTEMS, OR TAPES. TAPES AND MASTICS SHALL BE LISTED AND LABELED PER UL181A OR UL181B. DUCT TAPE IS NOT PERMITTED AS A SEALANT ON METAL DUCTS. DUCT CONNECTIONS TO FLANGES OR EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED.

F. DOMESTIC HOT WATER PIPING SYSTEMS SHALL BE INSULATED WITH 1" INSULATION HAVING A CONDUCTIVITY NOT EXCEEDING 0.28 BTU-INCH/HOUR-FIT2-F.

G. DOMESTIC WATER HEATERS WHICH ARE NOT PROVIDED WITH INTEGRAL HEAT TRAPS AND SERVE NONCIRCULATING SYSTEMS SHALL BE PROVIDED WITH HEAT TRAPS ON THE SUPPLY AND DISCHARGE PIPING AT THE WATER HEATER.

H. DOMESTIC HOT WATER SYSTEMS WITH RECIRCULATION PUMPS OR ELECTRIC HEAT TRACE SHALL BE CONTROLLED WITH 7-DAY TIME CLOCKS.

I. AN OPERATING AND MAINTENANCE MANUAL SHALL BE PROVIDED PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY. THE O&M MANUAL SHALL CONTAIN THE FOLLOWING INFORMATION AS A MINIMUM:

- EQUIPMENT CAPACITY (INPUT & OUTPUT).
- EQUIPMENT OPERATING AND MAINTENANCE INSTRUCTIONS.
- CONTROL SYSTEM MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SEQUENCES.
- CONTROL SYSTEM SETPOINTS SHALL BE SHOWN ON CONTROL DRAWINGS, AT CONTROL DEVICES, OR IN PROGRAMMING COMMENT ON DDC SYSTEMS.
- A COMPLETE WRITTEN NARRATIVE ON HOW EACH MECHANICAL SYSTEM IS INTENDED TO OPERATE.

SEQUENCE OF OPERATIONS

Energy Recovery Unit:

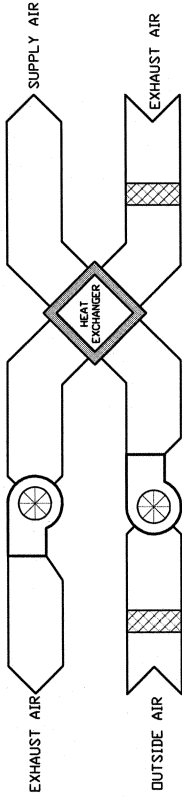
- General:  
Internal controls shall provide exhaust only frost elimination control across the heat exchanger. Fans shall run continue to operate.

- Occupied Mode:

The supply and exhaust fans shall start and the energy wheel shall cycle per the internal control requirements. See above for frost and economizer control.

- Unoccupied Mode:

There is no unoccupied mode.



ENERGY RECOVERY UNIT CONTROL SYSTEM SCHEMATIC

ENERGY RECOVERY UNIT SCHEDULE

SYMBOL	SUPPLY FAN		EXHAUST FAN		ELECTRICAL		MIN. WEIGHT EFF (LBS)	MANUFACTURER & MODEL	REMARKS
	CFM	ESP	HP	CFM	HP	MCA	MOCP	V/%	
ERU-1	1300	.5	2 1/3	1200	.5	2 1/3	3.5	12	240/1
								70%	625
									E-Z-AIR MODEL EZA-2270
									1 2 3

- APPROVED ALTERNATE MANUFACTURERS: COOK, GREENHECK, XETEX, AND NUTECH LIFE/BREATH.
- PROVIDE WITH EXHAUST ONLY FROST PREVENTION CONTROLS. SINGLE POINT POWER CONNECTION, DISCONNECT SWITCH, MOTOR STARTERS, 2" - 30% FILTERS IN EACH AIR STREAM, 15 YEAR WARRANTY ON HEAT EXCHANGER, VIBRATION ISOLATORS ON EACH FAN, AND ECONOMIZER CYCLE. PROVIDE UNIT WITH UL APPROVAL LISTING.
- UNIT SHALL OPERATE CONTINUOUSLY.

LOUVER SCHEDULE

SYMBOL	SERVICE	TYPE	NOMINAL SIZE	MIN. FREE AREA (SQ.FT.)	FINISH	MANUFACTURER AND MODEL	REMARKS
L-1	INTAKE	FIXED DRAINABLE	24X16	1.75	BAKED ENAMEL	RUSKIN ELF375D	1 2 3

- ALTERNATE MANUFACTURERS: GREENHECK, CARNES, AMERICAN WARMING, AIRLOUTE, SAFE-AIR/DOWCO, LOUVERS & DAMPERS, ARROW UNITED, CESCO, AND PUTTOFF.
- COLOR TO BE SELECTED BY ARCHITECT.
- PROVIDE WITH FLANGED FRAME AND BIRD SCREEN.

RETURN & EXHAUST GRILLE SCHEDULE

SYMBOL	NOMINAL SIZE	NECK/RUNOUT SIZE	CFM RANGE	REMARKS
R-1 EX-1	8X6	8X6	125-200	1 2 3 4
R-2 EX-2	18X6	18X6	250-375	1 2 3 4

REMARKS:

- SIZES BASED ON TITUS MODEL 33RLSS, STAINLESS STEEL CONSTRUCTION, 0° FIXED DEFLECTION, 1/2" SPACING, WITH ALUMINUM MESH INSECT SCREEN. APPROVED MANUFACTURERS INCLUDE ANEMOSTAT, CARNES, PRICE, NALOR, TUTTLE & BAILEY, KRUEGER, AND J&J REGISTER.
- PROVIDE WITH OPPOSED BLADE DAMPER.
- SIZES BASED ON A MAXIMUM NC LEVEL OF 25.
- WHITE FINISH.

SUPPLY GRILLE SCHEDULE

SYMBOL	NOMINAL SIZE	CFM RANGE	REMARKS
G-1 EX-1	8X6	50-125	1 2 3
G-2 EX-2	10X6	225-275	1 2 3

REMARKS:

- WALL GRILLE SIZES BASED ON TITUS MODEL 27ZF, STAINLESS STEEL CONSTRUCTION, DOUBLE DEFLECTION ADJUSTABLE BLADES, 3/4" SPACING, WHITE FINISH.
- PROVIDE WITH OPPOSED BLADE DAMPER.
- SIZES BASED ON A MAXIMUM NC LEVEL OF 25.



NO	REVISIONS	DATE

MINERAL MOUNTAIN REST AREA

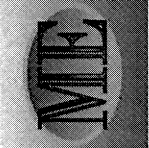
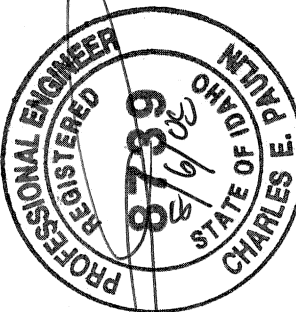
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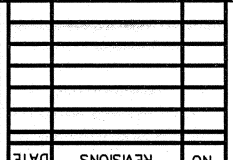
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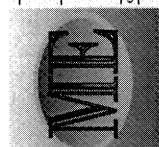


HVAC SCHEDULES



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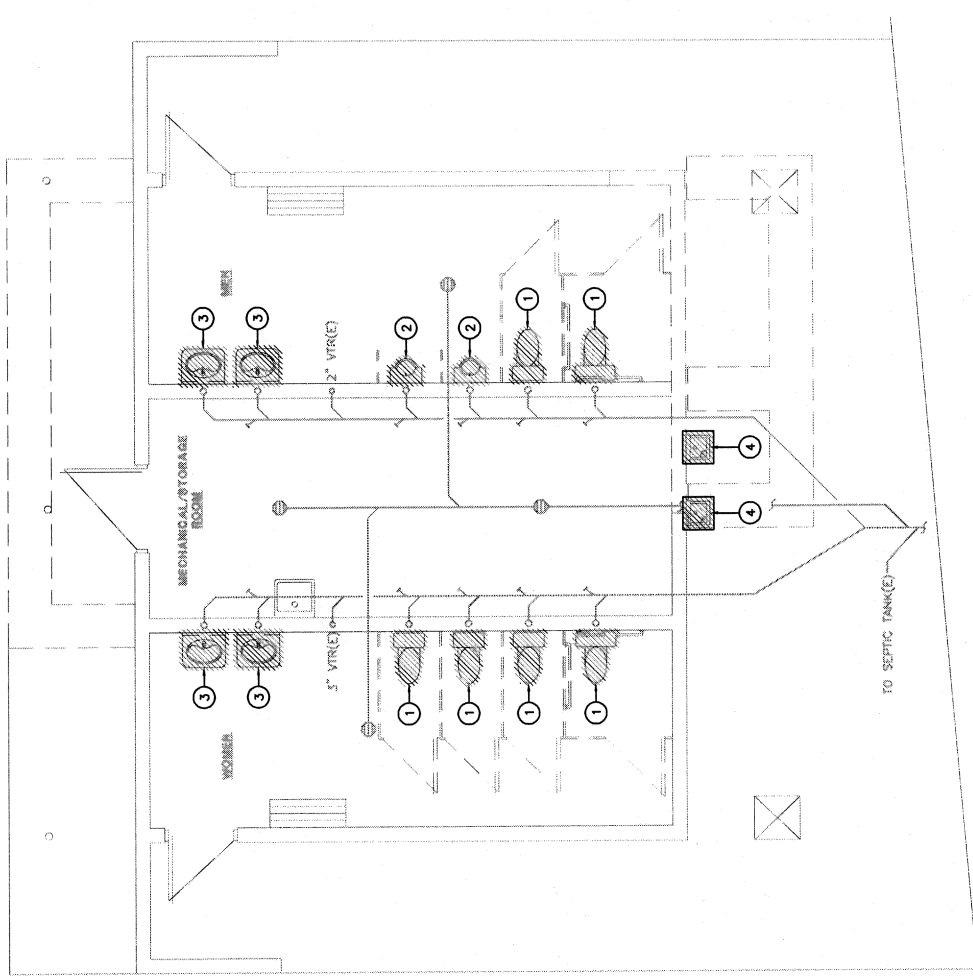
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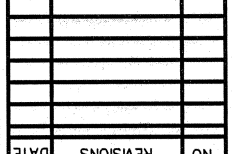
○ SYMBOL USED FOR NOTE CALLOUT.

1. ADJUST EXISTING WATER PIPING TO FIT NEW RESTROOM FIXTURE LAYOUT AND RECONNECT AS REQUIRED.
2. CONNECT EXISTING WASTE AND VENT PIPING TO NEW PLUMBING FIXTURE AS REQUIRED.
3. CONNECT NEW 4" WASTE LINE INTO EXISTING WASTE LINE.
4. CONNECT NEW 2" WASTE LINE INTO EXISTING WASTE LINE.
5. CONNECT NEW 2" VENT LINE INTO EXISTING VENT LINE.
6. RELOCATED DRINKING FOUNTAIN. CONNECT NEW 2" WASTE LINE TO EXISTING WASTE LINE.



○ SYMBOL USED FOR NOTE CALLOUT.

1. REMOVE EXISTING WATER CLOSET.
2. REMOVE EXISTING URINAL.
3. REMOVE EXISTING LAVATORY.
4. REMOVE AND RE-INSTALL EXISTING DRINKING FOUNTAIN. SEE NEW WORK PLAN.



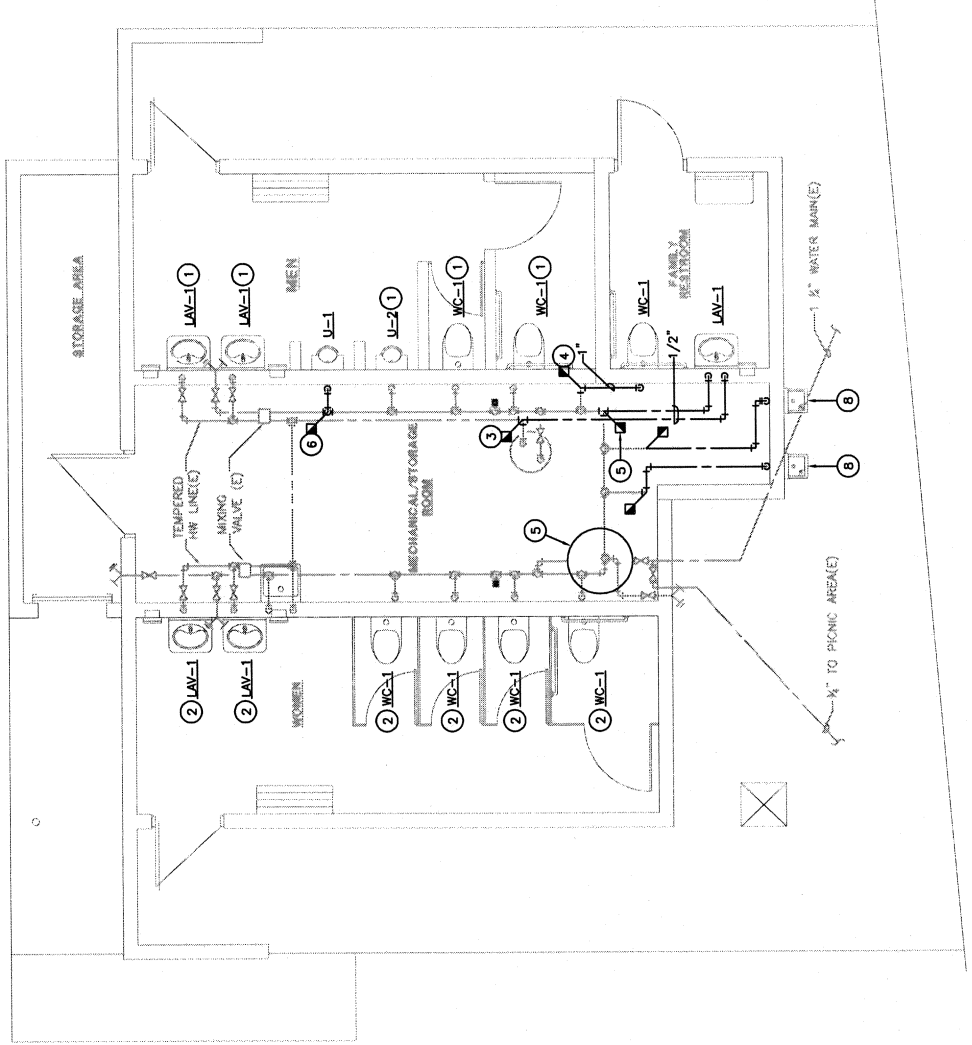
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**OVER 25 YEARS OF EXCELLENCE**  
project number: 08-463

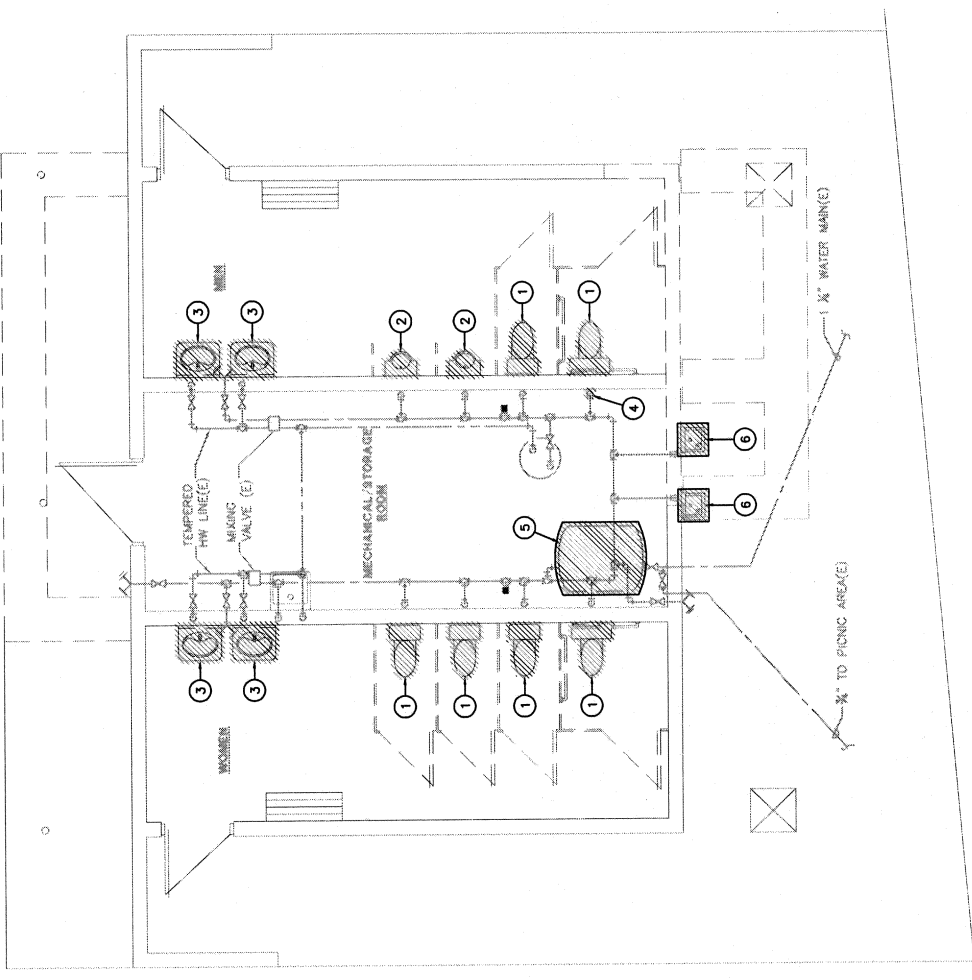
## PLUMBING FLOOR PLAN



**WATER NEW WORK FLOOR PLAN**  
1/4" = 1' — Ø"

**NEW WORK KEYED NOTES:**

- SYMBOL USED FOR NOTE CALLOUT.
1. ADJUST EXISTING WATER PIPING TO FIT NEW RESTROOM FIXTURE LAYOUT AND RECONNECT AS REQUIRED.
2. CONNECT EXISTING WATER PIPING TO NEW PLUMBING FIXTURE AS REQUIRED.
3. CONNECT NEW 1/2" HW LINE TO EXISTING HW LINE.
4. CONNECT NEW 1" CW LINE TO EXISTING CW LINE.
5. CONNECT NEW 1/2" CW LINE TO EXISTING CW LINE.
6. CONNECT NEW 3/4" CW LINE TO EXISTING CW LINE.
7. NEW BAG MODEL WTX-119S, NON-ASME, 119 GALLON PRESSURE TANK. RECONNECT TO EXISTING SYSTEM PER MANUFACTURES RECOMMENDATIONS.
8. EXTEND EXISTING 1/2" CW LINE TO RELOCATED DRINKING FOUNTAIN.



**WATER DEMOLITION FLOOR PLAN**

1/4" = 1' — 0"

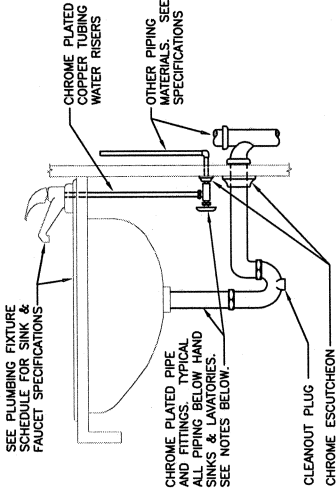


DEMOLITION WORK KEYED NOTES:

- SYMBOL USED FOR NOTE CALLOUT.
1. REMOVE EXISTING WATER CLOSET.
  2. REMOVE EXISTING URINAL.
  3. REMOVE EXISTING LAVATORY.
  4. REMOVE EXISTING CW LINE TO WATER CLOSET.
  5. REMOVE AND REPLACE EXISTING PRESSURE TANK. SEE NEW WORK PLAN.
  6. REMOVE AND RE-INSTALL EXISTING DRINKING FOUNTAIN. SEE NEW WORK PLAN.

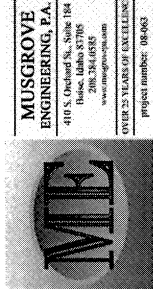
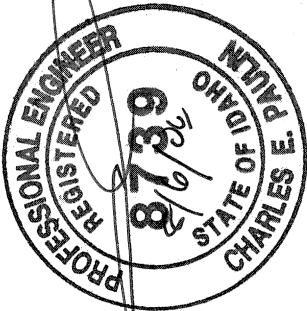
PLUMBING FIXTURE SCHEDULE									
SYMBOL	FIXTURE ADDITIONAL COMMENTS	CONNECTION SIZE (INCHES)				MANUFACTURER / MODEL NUMBER			
		WASTE	VENT	TRAP	HW	DESCRIPTION	ADDITIONAL COMMENTS		
WC-1	WATER CLOSET (MOTION SENSOR/ WALL HUNG)	3	2	INT.	1	---	KOHLER KINGSTON MODEL K-4329 / WALL MOUNTED, WITH ELONGATED BOWL KOHLER LUSTRA MODEL K-4666-C / ELONGATED OPERATOR LEAN WITH LARGE ELONGATED OPERATOR LEAN WITH LARGE ELONGATED OPERATOR LEAN WITH LARGE FIXTURE SUPPORT		
U-1	URINAL (MOTION SENSOR) (PUBLIC STANDARD)	2	1 1/2	INT.	3/4	---	KOHLER BAROON MODEL K-4960-ER / WALL MOUNTED, WITH 3/4" REAR SPUD SLOAN OPTIMA MODEL 195-10 ES-S SENSOR OPERATED FLUSHOMETER JAY R SMITH FIGURE #0637 ADJUSTABLE FIXTURE SUPPORT, BEEHIVE STRAINER		
U-2	URINAL (MOTION SENSOR) (ADA COMPLIANT)	2	1 1/2	INT.	3/4	---	KOHLER BAROON MODEL K-4960-ER / WALL MOUNTED, WITH 3/4" REAR SPUD SLOAN OPTIMA MODEL 195-10 ES-S SENSOR OPERATED FLUSHOMETER JAY R SMITH FIGURE #0637 ADJUSTABLE FIXTURE SUPPORT, BEEHIVE STRAINER		
LAV-1	MOTION SENSOR LAVATORY (WALL MOUNTED) (ADA COMPLIANT)	1 1/2	1 1/2	1 1/4	---	1/2	KOHLER KINGSTON MODEL K-2005, WITH K-7715 GRID DRAIN, SLOAN OPTIMA MODEL ETP-600 FAUCET AND MIXING VALVE 60-A, JAY R SMITH FIGURE NUMBER 0700 SUPPORT WITH CONCEALED ARMS		
FD-1	FLOOR DRAIN (CONCRETE FLOOR)	2	1 1/2	2	---	---	JAY R SMITH FIGURE NUMBER 2005Y-P050-HB, NO-HUB OUTLET, 5" 9 ROUND, NICKEL BRONZE FINISH, WITH ADJUSTABLE STRAINER AND TRAP PRIMER, INSTALL TOP OF DRAIN 1/8" BELOW FINISH FLOOR AND CAULK EDGE		

- NOTES:
- ALL ADA COMPLIANT FIXTURES MUST COMPLY WITH ICC/ANSI A117.1. SEE ARCHITECTURAL PLANS FOR HANDICAPPED FIXTURE DESIGNATIONS, LOCATIONS, CLEARANCES, AND MOUNTING HEIGHTS.
  - ALL EXPOSED HW PIPING AND DRAIN LINES BENEATH LAVATORIES AND ADA COMPLIANT SINKS MUST BE INSULATED TO PREVENT BURNS. REF. ARCHITECTURAL PLANS. INSULATE WITH MOLDED CLOSED CELL VINYL INSULATION - TRUEBRO OR EQUAL.
  - PROVIDE P-TRAP PRIMERS FOR ALL FLOOR DRAINS (PPP INC., OR EQUAL).
  - SEE SPECIFICATIONS FOR ALTERNATE APPROVED MANUFACTURERS.
  - BACKFLOW PREVENTION: THIS BUILDING IS PROVIDED WITH BACKFLOW PREVENTION DEVICE ON THE MAIN WATER SERVICE.



- NOTES:
- INTERIOR EXPOSED PIPE, VALVES AND FIXTURE TRIM, INCLUDING TRIM BEHIND CASEWORK DOORS SHALL BE CHROME PLATED.
  - ALL PIPING PENETRATIONS THROUGH FINISHED WALLS SHALL BE PROVIDED WITH CHROME ESCUTCHEONS.
  - ALL SINK TRAPS SHALL BE PROVIDED WITH A CLEANOUT PLUG IN THE BOTTOM OF THE TRAP.
  - ALL PLUMBING FIXTURES SHALL BE CAULKED AND SEALED TO SURROUNDING SURFACES.

**SINK TAILPIECE & TRAP DETAIL**  
NOT TO SCALE



ELECTRICAL LEGEND –LIGHTING

REFERENCE FIXTURE SCHEDULE FOR MOUNTING TYPE, MOUNTING HEIGHT, AND FIXTURE TYPE.	
	DOUBLE FACE EXIT SIGN, CEILING MOUNTED, PROVIDE UNSWITCHED CONDUCTOR.
	WALL MOUNTED DOUBLE FACE EXIT SIGN PROVIDE UNSWITCHED CONDUCTOR, MOUNT AT +8'-0" UNO.
	SINGLE FACE EXIT SIGN, CEILING MOUNTED PROVIDE UNSWITCHED CONDUCTOR.
	WALL MOUNTED SINGLE FACE EXIT SIGN PROVIDE UNSWITCHED CONDUCTOR, MOUNT AT +8'-0" UNO.
	ARROW INDICATES DIRECTION TO BE SHOWN ON SIGN.
	1'x1' LIGHT FIXTURE.
	1'x1' LIGHT FIXTURE, PROVIDE EMERGENCY BALLAST CONNECTED TO AN UNSWITCHED CONDUCTOR.
	TRACK LIGHT
	1'x4' LIGHT FIXTURE.
	1'x4' LIGHT FIXTURE, PROVIDE EMERGENCY BALLAST CONNECTED TO AN UNSWITCHED CONDUCTOR.
	2'x4' LIGHT FIXTURE.
	2'x4' LIGHT FIXTURE, PROVIDE EMERGENCY BALLAST CONNECTED TO AN UNSWITCHED CONDUCTOR.
	2'x2' LIGHT FIXTURE.
	2'x2' LIGHT FIXTURE, PROVIDE EMERGENCY BALLAST CONNECTED TO AN UNSWITCHED CONDUCTOR.
	DIRECT/INDIRECT LIGHT FIXTURE. SEE SCHEDULE FOR LENGTH.
	DIRECT/INDIRECT LIGHT FIXTURE. SEE SCHEDULE FOR LENGTH, PROVIDE EMERGENCY BALLAST CONNECTED TO AN UNSWITCHED CONDUCTOR
	STRIP FLUORESCENT LIGHT FIXTURE. SEE SCHEDULE FOR LENGTH.
	STRIP FLUORESCENT LIGHT FIXTURE. SEE SCHEDULE FOR LENGTH, PROVIDE EMERGENCY BALLAST CONNECTED TO AN UNSWITCHED CONDUCTOR.
	RECESSED LIGHT FIXTURE
	RECESSED LIGHT FIXTURE, PROVIDE EMERGENCY BALLAST CONNECTED TO AN UNSWITCHED CONDUCTOR.
	ROUND LIGHT FIXTURE
	WALL MOUNTED LIGHT FIXTURE.
	POLE LIGHT 1 HEAD WITH POLE
	TIME CLOCK
	PHOTO CONTROL CELL LOCATED 12" ABOVE ROOF FACING NORTH.
	OCCUPANCY SENSOR, PROVIDE RELAYS AND POWER PACKS AS REQUIRED
	EMERGENCY EGRESS LIGHTING. CONNECT TO AN UNSWITCHED CONDUCTOR.
	INDICATES FIXTURE TYPE. REFER TO FIXTURE SCHEDULE.
	EXTERIOR WALL PACK
	EMERGENCY EXTERIOR WALL PACK, PROVIDE EMERGENCY BALLAST CONNECTED TO AN UNSWITCHED CONDUCTOR

ONE LINE

	DELTA WYE TRANSFORMER UNO
	PANEL BOARD, SEE SCHEDULE FOR TYPE AND VOLTAGE PHASE
	CIRCUIT BREAKER, SIZE AND POLES INDICATED
	FUSE, SIZE AND TYPE INDICATED, PROVIDE FUSE FOR EACH POLE
	INTERRUPTER SWITCH, SIZE AND POLES INDICATED
	FUSED SWITCH, SIZE/POLES AND FUSE SIZE INDICATED
	DRAW OUT CIRCUIT BREAKER, SIZE AND POLES INDICATED
	INDIVIDUAL BREAKER WITH SHUNT TRIP, SIZE AND POLES INDICATED, NEMA 1 UNO
	INDIVIDUAL BREAKER, SIZE AND POLES INDICATED, NEMA 1 UNO
	GROUND FAULT PROTECTION
	TRANSIENT VOLTAGE SURGE SUPPRESSION
	ADJUSTABLE BREAKER SETTINGS (PER SPECIFICATIONS): '1'-LONG TIME '1'-SHORT TIME '1'-INSTANTANEOUS '1'-GROUND FAULT
	SHUNT TRIP COIL
	MOTOR
	DISCONNECT SWITCH, SIZE AND POLES INDICATED, NEMA 1 UNO
	OVERHEAD SERVICE DROP
	GENERATOR SET, MAIN BREAKER SIZE INDICATED
	AUTOMATIC TRANSFER SWITCH (ATS)
	METER AND BASE
	NEUTRAL
	TRANSFORMER
	PAD MOUNT TRANSFORMER

DEVICES

	SWITCH, TYPE AS INDICATED, +46" AFF
	DOUBLE POLE
	3-WAY
	4-WAY
	KEYED PILOT LIGHT
	DIMMER
	POWER RATED UNSWITCHED CONDUCTOR
	OCCUPANCY SENSOR
	LOW VOLTAGE, MOMENTARY OVERRIDE
	SUPERSCRIPT INDICATES LIGHTS TO BE SWITCHED TOGETHER
	DUAL LEVEL SWITCHING, INSIDE AND OUTSIDE LAMPS OF FIXTURE TO BE SWITCHED SEPARATELY.
	SINGLE CONVENIENCE OUTLET, +18" AFF UNO
	FLOOR MOUNT SINGLE CONVENIENCE OUTLET
	DUPLEX CONVENIENCE OUTLET, +18" AFF UNO
	FLOOR MOUNT DUPLEX CONVENIENCE OUTLET
	EMERGENCY DUPLEX CONVENIENCE OUTLET, +18" AFF UNO
	SWITCHED DUPLEX CONVENIENCE OUTLET, +18" AFF UNO
	FLOOR MOUNTED SWITCHED DUPLEX CONVENIENCE OUTLET
	FOURPLEX CONVENIENCE OUTLET, +18" AFF UNO
	FLOOR MOUNT FOURPLEX CONVENIENCE OUTLET
	CONNECTION POINT TO EQUIPMENT SPECIFIED, CONDUCTORS AND WIRES MAKE NML CONNECTION TO EQUIPMENT UNDER THIS SECTION, UNO
	FLOOR MOUNTED CONNECTION POINT, SEE NOTE ABOVE FOR REQUIREMENTS
	FLOOR MOUNTED JUNCTION BOX
	JUNCTION BOX
	WALL MOUNTED PUSH BUTTON, MOUNT AT SWITCH HEIGHT UNO
	WALL MOUNTED PUSH BUTTON, HANDICAPPED MOUNT AT SWITCH HEIGHT UNO
	WALL MOUNTED PUSH BUTTON, MOUNT AT SWITCH HEIGHT UNO
	MOTOR STARTER/CONTACTOR, SIZE/POLES NEMA 1 UNO AS INDICATED
	COMBINATION STARTER AND DISCONNECT, SIZE/POLES, FUSE SIZES AS INDICATED, NEMA 1 UNO
	FUSED DISCONNECT SWITCH, SIZE/POLES, FUSE SIZES AS INDICATED, NEMA 1 UNO
	NON-FUSED DISCONNECT SIZE/ POLES AS INDICATED, NEMA 1 UNO
	THERMOSTAT, +80" AFF PROVIDE CONDUIT, J-BOX, CONDUCTORS AS REQUIRED TO CONTROL ASSOCIATED UNITS, UNO COORDINATE WITH DIVISION 15.
	POWER POLE - DUAL CHANNEL
	TRANSFORMER
	PANELBOARD. SEE SCHEDULE FOR TYPE.
	EQUIPMENT CABINET, SURFACE MOUNTED
	EQUIPMENT CABINET FLUSH MOUNTED
	SURFACE MULTI-OUTLET RACEWAY
	MECHANICAL EQUIPMENT CALL OUT
	KITCHEN EQUIPMENT CALLOUT

ELECTRICAL ABBREVIATIONS

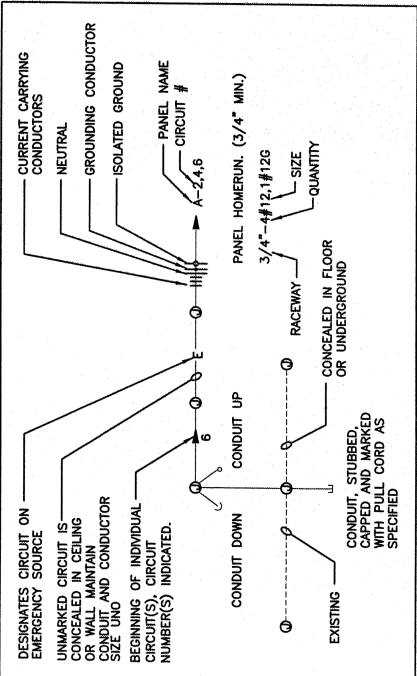
A	AMPERES	BS	BEAM DETECTOR, SENDER & RECEIVER
AB	BACKSPLASH	BSR	SMOKE DETECTOR, SENDER & RECEIVER
AF	ABOVE FINISHED FLOOR	E	MECHANICAL DUCT-MOUNTED DEVICE
AFG	ABOVE FINISHED GRADE	H	HEAT
AF	AMP FRAME	I	IONIZATION
AC	AMPS INTERRUPTING CAPACITY	ID	ID IN DUCT
ATS	AUTOMATIC TRANSFER SWITCH	P	PROTELECTRIC
AWG	AMERICAN WIRE GAUGE	R	RED
BD	BOTTOM OF DECK	WG	PROVIDE PROTECTIVE WIRE GUARD
BS	BOTTOM OF STRUCTURE		
C	CONDUIT		
CB	CIRCUIT BREAKER		
CF	COMPACT FLUORESCENT		
CKT	CIRCUIT ONLY, PROVIDE PULL-LINE		
CD	CONDUIT TRANSFORMER		
CTL	CONTROL		
DC	DIRECT CURRENT		
DEMO	DEMOLITION		
DET	DETECTOR		
DIT	DOUBLE TWIN TUBE		
E	EMERGENCY		
(E)	ELECTRICAL CONTRACTOR		
EC	EXISTING		
EL	EMERGENCY LIGHT		
F	FUSE		
FACP	FIRE ALARM CONTROL PANEL		
G/UND	GROUND		
GFI	GROUND FAULT CIRCUIT INTERRUPTER		
HH	HAND HOLE		
HD	HIGH INTENSITY DISCHARGE		
HPS	HIGH PRESSURE SODIUM		
HVAC	HEATING, VENTILATING, & AIR CONDITIONING		
IG	ISOLATED GROUND		
IPCO	IDAHO POWER COMPANY		
J-BOX	JUNCTION BOX		
KA	KILOAMP		
KVA	KILO VOLT-AMP		
KWH	KILOWATT HOUR		
LCP	LIGHTING CONTROL PANEL		
MB	MAIN BREAKER		
MCC	MAIN CIRCUIT BREAKER		
MCC	MOTOR CONTROL CENTER		
MDP	MAIN DISTRIBUTION PANEL		
MLO	MAIN LUGS ONLY		
MCC	MAIN CIRCUIT BREAKER CENTER		
MSB	MAIN SWITCH BOARD		
MTG	MOUNTING		
N	NEUTRAL		
NEC	NATIONAL ELECTRICAL CODE		
NIC	NOT IN CONTRACT		
NL	NIGHT LIGHT		
NO	NORMALLY OPEN		
NIS	NOT TO SCALE		
OH	OVERHEAD		
OS	OCCUPANCY SENSOR		
P	POLES		
PC	POLE CONTROL		
PVC	POLYVINYL CHLORIDE		
PWR	POWER		
RE:	REFERENCE		
REC	RECEPACLE		
REL	RELOCATED		
SF	SQUARE FEET		
TBD	TO BE DETERMINED		
TCP	TRIP CIRCUIT		
TSP	TRIP SHEDDED PAIR		
TTB	TRIPLE TUBE		
TYP	TYPICAL		
US	UNDERGROUND		
UNO	UNLESS NOTED OTHERWISE		
V	VOLT		
VA	VOLT-AMPERE		
WP	WEATHER PROOF/NEMA 3R		
W	WATT		
PROVIDED/PROVIDE	PROVIDE AND INSTALL		
BY	BY PROVIDED AND INSTALLED BY		
INSTALLED / INSTALL	PROVIDE AND INSTALL		

SHEET INDEX

EO.0	ELECTRICAL LEGEND/SHEET INDEX/LIGHTING COMPLIANCE
E1.0	ONE-LINE DIAGRAM/ELECTRICAL SCHEDULES/DETAILS
E2.0	ELECTRICAL FLOOR PLANS

LEGEND IS GENERAL IN NATURE. NOT ALL OF THE SYMBOLS SHOWN ARE USED IN THIS PROJECT.

CIRCUITING SYMBOLS



Lighting Compliance Certificate

2006 IECC  
Project Name: MINERAL MOUNTAIN REST AREA  
Project Location: MINERAL MOUNTAIN REST AREA  
Project Number: 080204  
Design/Construct: MUSGROVE ENGINEERING, P.A.  
419 S. Oakland St., Suite 604  
Boise, Idaho 83725  
208.384.6855  
www.musgrove-engineering.com  
Project Engineer: [Signature]  
Date: 8/15/08

Section 1: Project Information  
Section 2: General Information  
Section 3: Requirements Checklist  
Section 4: Compliance Statement

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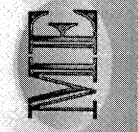
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ELECTRICAL COVER SHEET

MUSGROVE ENGINEERING, P.A.  
419 S. Oakland St., Suite 604  
Boise, Idaho 83725  
208.384.6855  
www.musgrove-engineering.com  
Project Number: 08-003



EO

APPROVED

SHEET

JOB NO.

CHECKED

DATE

DRAWN

STATE OF IDAHO  
TRANSPORTATION DEPARTMENT  
DIVISION OF HIGHWAYS

Lighting Application Worksheet

2006 IECC

Section 1: Allowed Lighting Power Calculation

Section 2: Proposed Lighting Power Calculation

Section 3: Compliance Calculation

Section 4: Compliance Statement

Section 5: Compliance Statement

Section 6: Compliance Statement

Section 7: Compliance Statement

Section 8: Compliance Statement

Section 9: Compliance Statement

Section 10: Compliance Statement

Section 11: Compliance Statement

Section 12: Compliance Statement

Section 13: Compliance Statement

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Section 95: Compliance Statement

PANEL:	(E) PANEL MAIN	PROJECT:	MINERAL MOUNTAIN REST STOP	225 MBR SC RATING:					
VOLTAGE:	120/240	1 PH	3 WIRE	AMPERE RATING:					
OXT NOTES:	5. PROVIDE NEW BREAKER		MOUNTING:		SURFACE				
1. RED HANDLE LOCKABLE BREAKER									
2. GFCO FOR EQUIPMENT PROTECTION									
3. AFC BREAKER									
4. EXISTING BREAKER									
REMARKS: EXISTING SQUARE D MOOD PANEL CONTRACTOR SHALL FIELD VERIFY ALL CIRCUITS AND LOADS. UPDATE PANEL SCHEDULE ACCORDINGLY.									
OXT	DESCRIPTION	QTY	LOAD AMPS	PHASE AMPS	AMPS/ LOAD	QTY	DESCRIPTION	QTY	
		NOTE	AMPS	A	N/A	C	POLES	NOTE	
1	ELT/SMECH ROOM	4	2.5	15	1	5.5			
3	ELWELL	4	21.0	50	2	24	20	1	
7	EPHAND DRYER	4	21.0	50	1	24	20	1	
9	EPHAND DRYER	4	17.0	30	1	20.5	20.5	15	
11	EPHAND DRYER	4	17.0	30	1	20.5	15	1	
13	EPHAND DRYER	4	17.0	30	1	20.5	18	15	
15	ELT/STORAGE	4	3.0	20	1	1.0	4	20	
17	ELT/STORAGE	4	21.0	50	2	28.5	28.5	20	
19	ELT/STORAGE	4	21.0	50	2	28.5	20	2	
21	EAWATER HEATER	4	15.0	30	2	22.5	22.5	15	
23	ELT/STORAGE	4	15.0	30	2	22.5	22.5	15	
25	ELT/STORAGE	4	33.4	100	2	54.9	44.4	20	
27	ELT/STORAGE	4	39.4	100	2	64	44.4	20	
29	ELT/STORAGE	4	30	15	1	3	44.4	20	
TOTAL		179.4		181.9		18.4		41	
TOTAL KW		18.4		41		TOTAL KW		41	

PANEL: (E) PANEL SUB		PROJECT: MINERAL MOUNTAIN REST STOP		100 MBR SC RATING:									
VOLTAGE: 120/240		1 PH 3 WIRE		MOUNTING:									
OXT NOTES:		5. PROVIDE NEW BREAKER		SURFACE									
1. RED HANDLE LOCKABLE BREAKER													
2. GFC FOR EQUIPMENT PROTECTION													
3. AFC BREAKER													
4. EXISTING BREAKER													
REMARKS:		EXISTING PANEL		CONTRACTOR SHALL FIELD VERIFY ALL CIRCUITS AND LOADS. UPDATE PANEL SCHEDULE ACCORDINGLY.									
OXT	DESCRIPTION	QTY	LOAD AMPS	PHASE AMPS	AMPS/ LOAD	QTY	DESCRIPTION	QTY					
	NOTE	AMPS	A	N/A	C	POLES	NOTE						
1	ELT/STORAGE	4	15.0	30	2	35	35	--	--	2	ELT/STORAGE	2	
3	ELT/STORAGE	4	15.0	30	2	35	35	--	--	2	ELT/STORAGE	2	
5	ELT/STORAGE	4	15.0	30	2	35	35	--	--	2	ELT/STORAGE	2	
7	ELT/STORAGE	4	5.0	20	1	15	15	20	1	10.0	4	VALVE PANEL	6
9	ELT/STORAGE	5	3.4	15	2	3.4	3.4	20	1	10.0	4	VALVE PANEL	6
11	ELT/STORAGE	5	3.4	15	2	3.4	3.4	20	1	10.0	4	VALVE PANEL	6
13	ELT/STORAGE	5	1.0	20	1	3.4	1.0	20	1	10.0	4	VALVE PANEL	6
TOTAL		53.4		39.4		11.1		TOTAL KW					

PANEL SCHEDULES

NTS

LIGHTING FIXTURE SCHEDULE-08063						
TYPE	DESCRIPTION	MTG.	LAMPS	MTFG. & CATALOG NUMBER	OR EQUAL BY	NOTES
B1A	4 BARE-STRIP FLUORESCENT 1-LAMP, WIRE GUARD	SURFACE	(1) 32W T8	LITHONIA NO. C-1-32-MVOLT-GEB10S-WGCUN	LIGHTOLIER METALUX COLUMBIA LTG	1
VF1	VANDAL RESISTANT FLUORESCENT 2 LAMP, SURFACE MOUNTED, ENCLOSED	SURFACE	(2) 32W T8	LITHONIA NO. VSL-32-SCE-MVOLT-GEB10S ACCESSORIES-RK1T20BIT	VISIONAIRE LUMARK SPERO	1
FL1	MINI ARCHITECTURAL FLOOD LIGHT, WIRE GUARD MEDIUM FLOOD DISTRIBUTION, YOKE MOUNT, FULL VISOR AND VANDAL GUARD	AS NOTED	(1) 70W MH	LITHONIA NO. ASF170M-MDF-TB-YK-LP1- ASF-FVBVBVG-DBDT	VISIONAIRE LUMARK SPERO	1
LIGHTING FIXTURE SCHEDULE NOTES: 1 SUBSTITUTIONS WILL BE ALLOWED IF SUBMITTED PRIOR TO BID DATE BY THE GREATER OF: 7 BUSINESS DAYS OR THE TIME PERIOD SPECIFIED BY DIVISION 1 SPECIFICATIONS, AND IF DEEMED EQUAL BY THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING SUBSTITUTED FIXTURES MEET OR EXCEED THE SPECIFICATIONS OF THE FIXTURES SPECIFIED.						

FIXTURE SCHEDULES

NTS




NO	REVISIONS	DATE

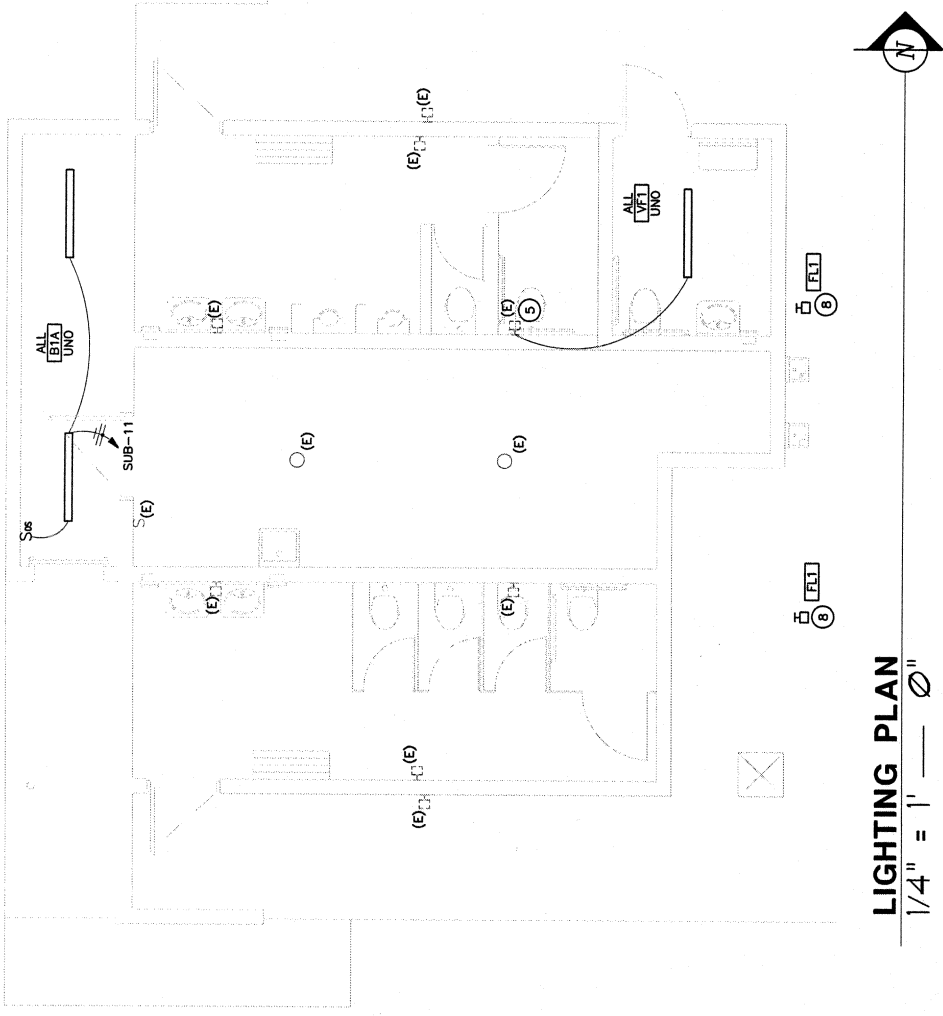
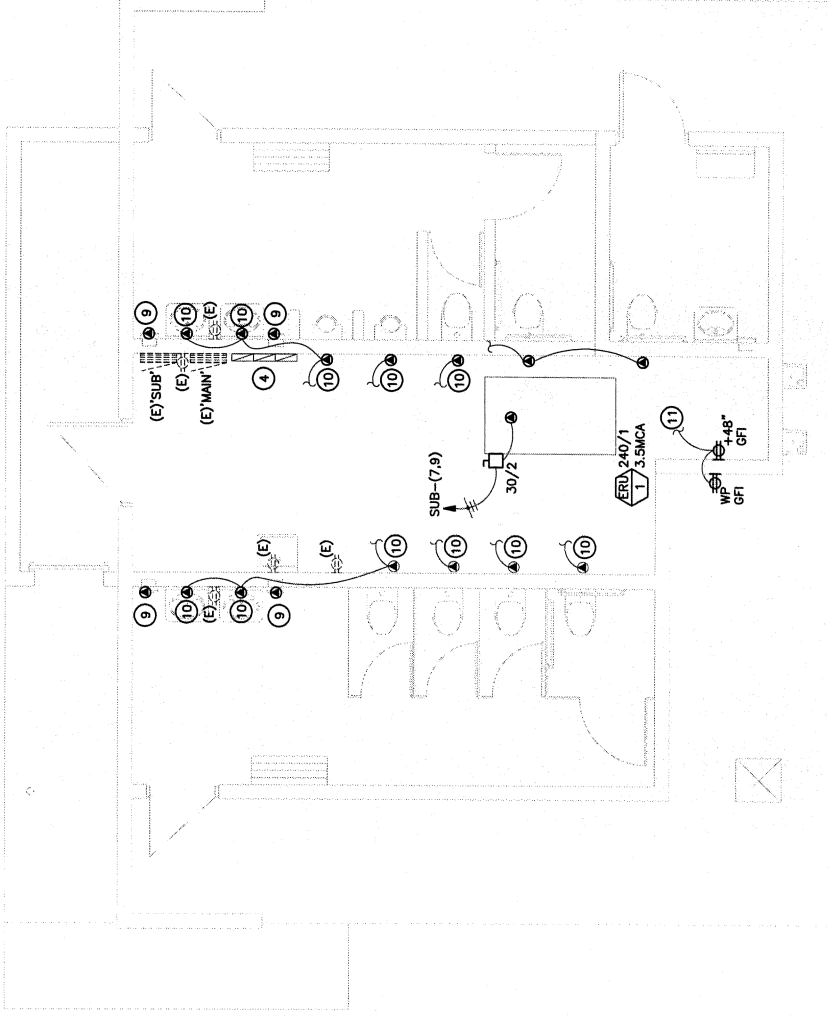
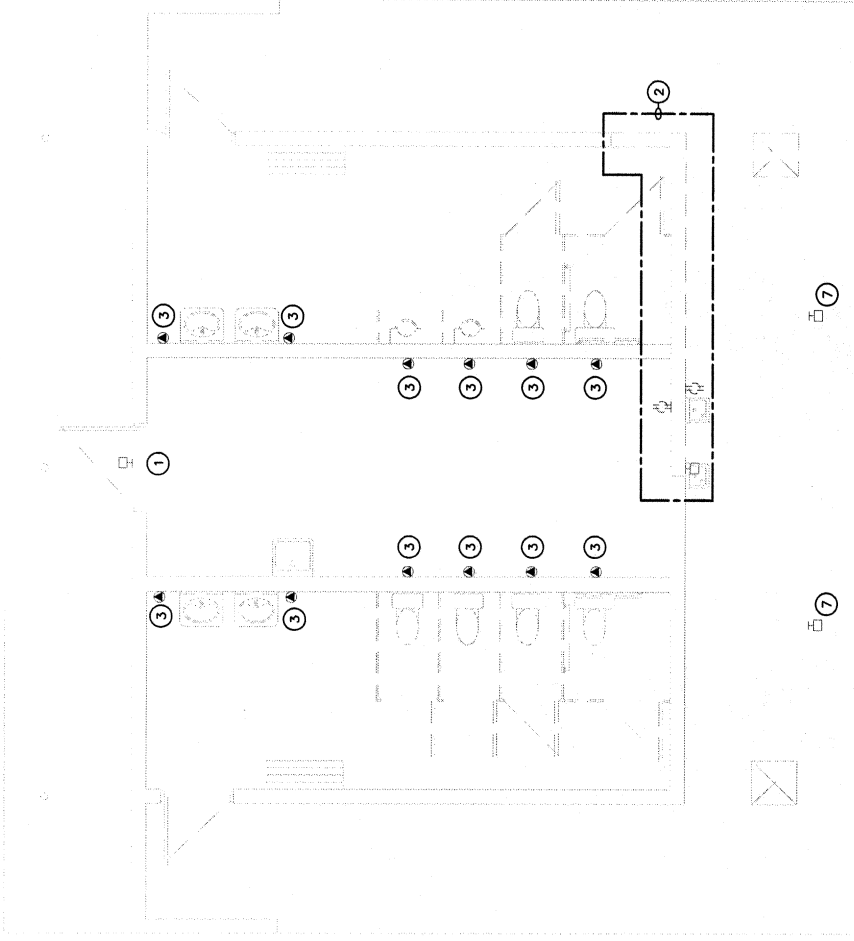
MINERAL MOUNTAIN REST AREA

STATE OF IDAHO  
TRANSPORTATION DEPARTMENT  
DIVISION OF HIGHWAYS

DRAWN	JS
DATE	8/05/08
CHECKED	TM
JOB NO.	080204
SHEET	E1



MUSGROVE  
ENGINEERING, P.A.  
410 S. Orchard St., Ste. 104  
Boise, Idaho 83726  
208.384.4935  
www.musgrove-engineering.com  
OVER 25 YEARS OF EXPERIENCE  
project number: 08-063



GENERAL NOTES:

- A. THESE DEMOLITION DRAWINGS ARE INTENDED TO ASSIST THE ELECTRICAL CONTRACTOR IN ESTABLISHING AREAS REQUIRING DISCONNECTION, REMOVAL, OR RELOCATION OF ELECTRICAL EQUIPMENT, OUTLETS, WIRING, DEVICES, FIXTURES, ETC. AND TO ASSIST THE CONTRACTOR IN ESTABLISHING QUANTITIES OR EXTENT OF DEMOLITION AND RECONNECTION. THE CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY EXAMINE ALL REQUIRED DEMOLITION WORK AND INCLUDE ALL LABOR AND INCIDENTALS WHICH MAY BE NECESSARY TO PERFORM DEMOLITION RECONNECTION AND TEMPORARY POWER CONNECTIONS IN HIS BID.
- B. ALL EXISTING WALLS AND DEVICES TO REMAIN U.N.O.
- C. THESE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE. THERE WILL BE AN ATTEMPT TO SHOW THE LOCATION OF ALL ELECTRICAL EQUIPMENT AND DEVICE LOCATIONS COORDINATE WITH ARCHITECTURAL, MECHANICAL, AND PLUMBING DIVISION FIRST TO COORDINATE WITH ARCHITECTURAL, MECHANICAL, AND PLUMBING DRAWINGS FOR ADDITIONAL WORK THAT IS REQUIRED BY THE CONTRACTOR.
- D. MECHANICAL EQUIPMENT SHOWN IN APPROXIMATE LOCATION. COORDINATE WITH DIVISION 15.

KEYED NOTES:

1. EXISTING DEVICES(8) TO BE REMOVED. REMOVE UNUSED CONDUIT, CONDUCTORS AND J-BOXES.
2. EXISTING WALL TO BE REMOVED. REMOVE ALL EXISTING CONDUIT, CONDUCTORS AND J-BOXES. MAINTAIN PROTECTIVE CONDUIT AND J-BOXES. MAINTAIN PROTECTIVE CONDUIT TO ALL DOWN STREAM DEVICE THAT ARE EXISTING TO REMAIN.
3. EXISTING DEVICE TO BE RELOCATED OR REPLACED. INTERCEPT EXISTING CONDUIT, CONDUCTORS AND J-BOXES. RE-USE POWER PLAN, REMOVE UNUSED CONDUIT, CONDUCTORS, AND J-BOXES.
4. EXISTING LIGHTING CONTACTOR AND CONTROL BOXES TO REMAIN.
5. REMOVE AND EXTEND EXISTING CIRCUIT TO NEW FIXTURE. RE-USE EXISTING CIRCUIT IS ROUTED THROUGH EXISTING CONDUIT, CONDUCTORS, CONTACTOR AND MODIFY AS REQUIRED. RE-EZ-POWER PLAN
6. NOT USED
7. EXISTING FIXTURE MOUNTED TO EXTERIOR OF BUILDING TO BE REMOVED. RE-USE EXISTING CIRCUIT FOR NEW FIXTURE.
8. CONNECT NEW FIXTURE TO EXISTING EXTERIOR LIGHTING CIRCUIT AT THIS LOCATION. FIXTURE TO BE SURFACE MOUNTED TO IN LOCATION OF PREVIOUS FIXTURE. PROVIDE MOUNTING HARDWARE AS REQUIRED. AM FIXTURE SUCH THAT IT ILLUMINATES THE FLAG(S). COORDINATE AMING WITH NEW FLAG POLE LOCATIONS.
9. CONNECT NEW HAND DRIVERS TO EXISTING CIRCUIT. RE-EZ-ELECTRICAL DEMOLITION PLAN.
10. CONNECT NEW PLUMBING FIXTURE SERVOIS TO EXISTING CIRCUIT. INTERCEPT AND EXTEND EXISTING CIRCUIT. RE-USE POWER PLAN, REMOVE UNUSED CONDUIT, CONDUCTORS AND JUNCTION BOXES AS REQUIRED.
11. INTERCEPT EXISTING CIRCUIT SERVING DEVICE RECEPTACLES IN THIS AREA AND TO NEW DEVICE. RE-EZ-ELECTRICAL DEMOLITION PLAN

MINERAL MOUNTAIN REST AREA

STATE OF IDAHO  
TRANSPORTATION DEPARTMENT  
DIVISION OF HIGHWAYS

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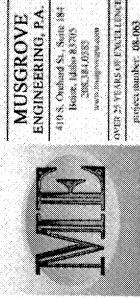
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ELECTRICAL FLOOR PLANS